AMERICAN VETERINARY REVIEW.

MARCH, 1901.

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EDITORIAL.

CLOSING VOLUME XXIV.

Subscribers to the volume which closes with this number can have, we think, but little reason to find fault with the publishers, as it has been the largest in size and in importance of contents of any that have ever been issued in the quarter of a century it has existed. In the twelve monthly numbers comprising Volume XXIV there have been printed 50 leading editorial articles upon scientific and economic subjects, the latter including topics appertaining to the welfare of the profession at home, in the State and National legislatures, association work, and wherever a discussion could be of service to a subject by bringing it prominently before our readers. In the department of "Original Articles" there have appeared as the productions of writers of both hemispheres 42 separate papers, some of them requiring three or four issues to complete the subject, occupying in all 360 pages of the REVIEW. While our readers have not availed themselves of our oft-repeated invitation to build up our practical knowledge of pathology by reporting their interesting cases, the department of "Reports of Cases" has contained 30 of such contributions, many of them accompanied by photos, which we have reproduced to elucidate the subject of the report. The "Department of Surgery" has been a feature of the volume, and he who preserves the twelve numbers will have a valuable treatise upon veterinary surgery of the modern scientific kind, to be supplemented in Volume

XXV by greater elaboration of the more practical operations. To render the work of the Drs. Merillat of more value there have appeared about 40 pen-and-ink drawings illustrative of the procedures described in the text of the department. Dr. Eichhorn, although only assuming charge of "German Review" in the October number, furnished 26 abstracts from the German veterinary press, while Prof. Liautard has kept up his old-time energetic search of the literature of many lands in quest of items which would add to the knowledge and interest of his American readers. In the English journals he has found 25 articles which he deemed worthy of perpetuation in our annals; 30 in the French publications, 23 in Italian papers, while the Belgian extracts number 4 and the Russian 6. The senior editor has contributed 16 abstracts to "Review of Biology," and has reviewed most of the works bearing upon veterinary science which have appeared during the year. Correspondents have contributed letters upon various phases of professional life to the number of 18, while the news of colleges has been told in eight articles. We have tried very diligently to report the proceedings of the veterinary associations of the entire American continent, but many have escaped us through the failure of the Secretaries to send in the accounts of their deliberations. However, 53 reports of meetings or items relating to them have appeared during the year, which has occupied many pages of the journal. "News and Items" is a chatty little department which keeps in touch with the personal side of professional life, and contains very many interesting items which cannot find a place in any of the regular departments. Add to this array of literature a number of special articles upon contemporaneous events, and the story of Volume XXIV is told. Elaborate each of the foregoing departments to a considerable extent, and add some special features soon to be inaugurated, and the next volume can be anticipated. Ask yourself the serious question: "Can I afford to be without Volume XXV of the REVIEW?" and we are willing to abide by your decision.

EUROPEAN CHRONICLES.

THE "HORSE SICKNESS" OF SOUTH AFRICA is a disease which seems so far unknown in Europe, but causes much trouble among horses in South Africa, and has proved such a precious assistant to the Boers at the beginning of the war in the Transvaal. It has been the subject of much study, not only from gentlemen now at the seat of war, but also from European veterinarians, and among the first Prof. Nocard. At a recent meeting of the Société Centrale he contributed a communication, from which we make the following extracts: "Horse sickness has not only an interest of actuality, but also a great one from the scientific point of view. Raging during summer, it attacks almost all horses recently imported, and kills most of them; those that recover are called 'salted,' and have a great value, being immunized against another attack.

"It seems to be a special disease of solipeds, but while it is always fatal to horses, donkeys almost always resist it, and in mules more than half recover. Other species seem refractory to it, although sheep, goats and bovines have been inoculated with it. The first symptoms appear eight or nine days after infection by progressive hyperthermia, with nightly remissions; this symptom often escapes attention. When the horse is recognized as ailing, death is already near; it is sometimes so rapid that there is scarcely time to see that he is sick; during several hours there are serious disturbances in the respiration, anxiety, deep prostration; then a foaming, whitish or rosy discharge, and sudden death. This is the *dunpaardziete* of the Boers. In another form, less rapid, the *dikkopziete*, death is preceded by a more or less large œdema of the head and neck, the other troubles appearing later.

"At the post-mortem there is serosity in the pericardium, in the cellular tissue of the lungs, under the pleura, in that of the head and neck in the slow form.

"The disease is easily inoculated, and although it is almost always fatal to all imported horses, it is very easy to protect them from it. All that is necessary is to bring them indoors in

a well closed stable in the evening before sunset and not allow them to go out in the morning until after sunrise. It is the application of the prophylaxy of paludism in man to horse sickness of horses which the Boers knew of. A variety of mosquito (*anophiles*) is the agent of propagation of paludism, as has been demonstrated by Laverau and practically proved by Patrick Hanson and by Grossi, and by comparison with them it is proper to think that probably 'horse sickness,' is also like paludism, due to the sting of some noctambulist insect which is yet unknown. What is the virulent agent is yet ignored. All that is known is that the blood of the ticks is virulent, and that inoculated in minute quantity it gives rise to the disease with its ordinary fatal end, its symptoms and its lesions. And not only is it virulent, but conserves its virulency almost forever."

Nocard has produced the disease with blood that he had kept for five months and for two years and four months.

What is the agent of this so well marked and lasting virulency? To this date no one can tell, and all researches and experiments to cultivate it have failed.

Until lately, all attempts at treatment or vaccination have been without results. In a recent work, Eddington related experiments which he has made and which seem to be encouraging. In mixing virus treated with care with a quantity of serum from horses highly immunized, he has succeeded in polluting 14 horses out of 23. These experiments were, however, made in the laboratory and it will take some time before they can be applied in practice.

The observations and experiments of Eddington are found *in extenso* in the *Journal of Comparative Pathology*, by Prof. J. McFadyeau.

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SEPTIC VIBRIO AND THE BACTERIA OF SYMPTOMATIC ANTHRAX (*Bacterium Chauvosi*) present morphologically close resemblances. The well known etiological conditions that predominate in the development of gangrenous septicæmia are found in symptomatic anthrax, and the lesions of those two

diseases present perfect similarities. For those reasons the two pathogenous agents, in bacterian classification, have been brought together and even sometimes identified. The investigations of Roux and Chamberland, of Kitasato and Duenschmann show the interest in the comparative study of these two germs, and recently the subject has been taken up again by two well-known authorities—Profs. Leclainche and Vallée, of the Veterinary School of Toulouse. Their researches upon symptomatic anthrax have brought them to study the relations of both germs to the double point of view of the special properties of each and of the immunity against the diseases they give rise to. It is in that way that they were called to consider their morphology, the various methods of immunization by vaccine viruses with toxines, and the use of serotherapy, which demonstrated to them that to that point of view, septic vibrio and *B. Chauvosi* proceed in an identical manner. The effects upon the agglutination upon the cultures have also received their attention. The conclusions advanced by these authors are that :

(1) There exists between the bacteria of symptomatic anthrax and the septic vibrio, biological relations which are very close. However, it is possible to differentiate them : the septic vibrio gives, in the serosity of the specific œdema and in the peritoneum of cobaye, long threads which are regularly missing in symptomatic anthrax.

(2) Immunization against septic vibrio can be extended to all the methods which are applied to symptomatic anthrax.

(3) Immunizing serums against anthrax and gangrenous septicæmia have a strictly specific action. The observations made on the agglutination with the same serums, is also specific.

(4) In relation to anthrax, immunization does not imply rèsistance to the septic vibrio, and reciprocally animals vaccinated against septicæmia are not against symptomatic anthrax.

Those experiments have a great bacteriological value, throw an important light on the subject, and are valuable addi-

tions in a scientific point of view. After all, the study of the *infinitively small* is a field which for many years to come will not be exhausted, if it will ever be. A. L.

PUSILLANIMOUS PESSIMISM.

After reprinting several items from the REVIEW giving accounts of the return of a number of American veterinarians from journeys to South Africa in charge of English transports of horses and mules, the *Veterinary Journal* (London) makes the following comment:

"It would seem from the above that the supply of veterinary surgeons from Britain is now exhausted, or that the American veterinary surgeon, who does not possess a diploma recognized in Britain, is a cheaper or a better man. It must be remembered that these Americans go in *veterinary* charge of British horses and mules; that they associate with the transport and ship's officers as social equals, and are cabin passengers; and that their fare is paid from any part of America to the port of embarkation in America, and their return fare is paid from Africa home again. Has the Council anything to say in this matter?"

The first sentence is capable of various interpretations. As a naked proposition it is evidently true that an American veterinary diploma will not admit one to practice in Britain, and just as true that a British veterinary diploma does not license a veterinarian to enter practice in the State of New York—these questions being regulated here by the State, not by the nation. In former times America drew heavily on foreign countries for veterinary teachers, investigators and practitioners, but that has ceased; and, there being no important movement in either direction, the question of recognition of diplomas is, from a practical standpoint, of no interest.

Turning to the table of contents of the same issue we find eight contributions to the list of "Original Papers," three American, apparently three British, and two from Continental Europe. The American veterinary profession craves no higher recognition. Among nearly twenty veterinary schools in

America there is well-nigh endless variety—from plainly disreputable diploma mills to veterinary departments in our best universities, in which the requirements for entrance, length of course, equipment and requirements for graduation will compare favorably with British schools. The suggestion of cheapness of American veterinarians for temporary service in transporting horses from the United States to South Africa will depend on the point of view. Americans are 3000 miles nearer the point of embarkation than the British veterinarian. They accept temporary service for various reasons—as a vacation and rest from ordinary routine work, or from a worthy desire for the experience. Some American practices only continue a part of the year and leave practically nothing to do at a given season, so that the trip may be a financial gain, and it would not be strange if among these were some "cheap" men. That we have them there are few who will deny.

One thing is certain: the average veterinarian of America is not, as a rule, applying for temporary employment in the British service at and simply for the rates paid, and we have no reason to believe that the head of the British remount service in America thinks that he is generally securing representative veterinarians of extensive experience; nor have we any ground to assume that if a British applicant were in calling distance he would not be preferred over an American.

THE BUREAU OF ANIMAL INDUSTRY.

In the debate upon the Agricultural Bill in the House of Representatives on January 29, Mr. Corliss, of Michigan, made an attack upon the work of the Bureau of Animal Industry. The growth of this bureau and the appropriations therefor, he declared, were altogether too rapid. He made a point of order against the increase of salary of the chief of the bureau from $4000 to $4500, and it went out of the bill. He also moved to cut down the appropriation for this bureau from $1,050,000 to $1,000,000. Mr. Wadsworth and Mr. Williams, of Mississippi, warmly defended the appropriation. The latter expressed his

surprise that Mr. Corliss' attempt at retrenchment should come in connection with the Agricultural Department, of all departments, and in this particular bureau of all bureaus. This bureau, he said, had done more good than all the others. His own country was not interested in it. The South raised no cattle for export, but with the countries which were to-day taking our meat products, especially Germany, inclined to make war upon our meat, the absolute necessity for the strictest sort of surveillance must be apprehended. After this incident a host of defenders came to the rescue of the Bureau of Animal Industry and the amendment was overwhelmingly defeated.

"TORSION OF THE UTERUS" in mares and cows has for several months been a favorite subject among numerous correspondents of the REVIEW—all reporting cases from their practices, showing the difficulties encountered, and all pursuing different methods of correcting the accident. These reports are of fascinating interest to practical veterinarians, and are eagerly read and thoroughly digested by them. Possibly no attempt to elieve the condition was more novel and successful than that described in the current number by Dr. McCrank, of Plattsburgh, N. Y., wherein the operation of laparotomy was performed, the uterus seized and returned to its normal position, and delivery secured through the natural passages, followed by rapid and complete recovery.

"EXPERIMENTS IN TREATING INFECTIOUS MAMMITIS IN THE COW," by Dr. E. Zschokke, of Zurich, translated by Archibald R. Ward, a student at the New York State Veterinary College, is in hand awaiting publication in the April REVIEW. Following closely upon the excellent paper by Prof. W. L. Williams (February REVIEW), it will make a valuable addition to the line of thought and research outlined in that article. It is of especial value, since it presents quite forcibly a new idea in therapeutics to English readers (auto-therapeutics), while the character of the investigator, Zschokke, is very high. The

translator has done a great deal of work along the line of dairy bacteriology, being a teacher of this subject in the Agricultural Department of Cornell while a student in the veterinary college.

ORIGINAL ARTICLES.

A BACTERIOLOGICAL STUDY OF FISTULOUS WITHERS, BOTRYOMYCOSIS AND INFECTED WOUNDS IN THE HORSE.

By Carl W. Gay, D.V.M., Syracuse, N. Y.

It is customary at the New York State Veterinary College to make, as far as possible, bacteriological examinations of the cases presented at the college clinic. The results of certain of these investigations have already been published.* The awarding of a University Fellowship to the Department of Veterinary Science has made it possible to conduct, during the past year, more specific investigations concerning the etiology of wound infection.

The cases herein described, from which our data was obtained, include all of those which, for convenience, may be discussed in the following groups, viz.: fistulous withers, poll evil, scirrhous cord, deep shoulder abscesses, infected open wounds and infected operative wounds. Examinations were also made of the skin after thoroughly disinfecting it for operation.

In this work the usual culture methods were employed, viz.: tubes of bouillon and slant tubes of agar were inoculated, and sub-cultures made from the colonies which developed on the surface. In some cases, agar plate cultures were used, but in most instances there was no difficulty in securing well isolated colonies on the agar slant. In using agar plates, some difficulty

* Moore: "Observations Concerning the Significance of Streptococci in Comparative Pathology."—Am. Vet. Review, Jan.–March, 1900.

was experienced in securing growths of streptococci. It was observed that in some instances bouillon cultures, which failed to develop any streptococcus colonies after undergoing the plating process, would do so when simply transferred to tubes of agar. Throughout this work, the extremely delicate nature of the streptococcus growths in the various cultures, requiring frequent transfer to fresh media, was noticed The organisms obtained were studied on the various media, but in many instances, as of the pus cocci, when there seemed no question as to their identity, diagnosis was based on the microscopic examination and the growths in bouillon and on agar.

In collecting the material or in making the cultures direct from open wounds, all possible precautions against external contamination were taken. As aseptic surgery is practiced in the clinics of this college, all tissues removed for examination were obtained in a sterile condition, in so far as the invasion of any bacteria from without was concerned, and these precautions were maintained until cultures had been made from whatever purulent material might be contained within. In making cultures from abscesses, which were opened for the first time, the field was first thoroughly disinfected, incisions made with sterile instruments, and the culture medium inoculated immediately from the pus contained within the abscess.

When we had to deal with open wounds, which were already discharging, the cultures were made from the points where the discharge was freshest and least exposed to dust and external influences generally, or when possible a sufficient quantity was pressed out by manipulation of the tissues surrounding the wound, and the culture medium inoculated from this directly.

FISTULOUS WITHERS.

This is one of the commonest and at the same time most obstinate affections with which the veterinarian has to deal. We have had the opportunity of observing these cases in all types and stages of development. The notes on six are appended.

Case I.—Clinic case 1921, Sept. 28, 1899. A bay pacing

mare, weight, 900 pounds ; 8 years old. Had been used for general farm and road work. About August 1, 1898, a hard round tumor was noticed on the left side of the neck, just anterior to the withers. The condition of this tumor remained unchanged till April 1, 1899, when it became enlarged, very tender and fluctuating. The tumor was subsequently twice operated upon by the local veterinarian, and before the incisions had healed the withers became greatly swollen. When presented at this clinic, the region of the withers was enormously thickened, very tender, and discharging from an open wound on the left side, anterior to the withers. Tubes of bouillon and agar were inoculated from the open wound and from the lymph like material discharged when the enlarged withers were incised. Those from the open wound developed into cultures from which were isolated a streptococcus, and a white micrococcus.* Several of the tubes inoculated from the closed abscesses remained sterile for a long time, but others finally developed into cultures of streptococci.

Case II.—Clinic case 2138, Dec. 2, 1899. Patient was an aged bay mare, weight 950 lbs., reported to have been at one time a runner. There is at present one fistula opening on the right side of the neck, and another opening a few inches posterior to this one. This condition has existed for three years and during that time various methods of treatment have been employed without success.

Both fistulæ were freely incised, making a very extensive wound in the posterior cervical region. There was a great amount of old cicatricial tissue of a very dense nature in the wound. At places it was calcareous and very hard to cut. Some pieces were removed aseptically for the purpose of examination and study. Tubes of bouillon and agar were inoculated with the pus discharging from the wounds prior to operation and at different times afterward. A streptococcus and a white micrococcus were isolated each time.

Case III.—Clinic No. 2228, Jan. 25, 1900. Patient a bay horse, weight 1000 lbs., 6 years old ; has been used of late in quite heavy draft, hauling logs. About sixteen days ago the owner noticed a swelling, five by ten inches in diameter, in the

* In giving the results of the bacteriological examination of the following cases, we have followed Migula's classification of bacteria, in which any spherical organism dividing in more than one plane is classed as a micrococcus. Hence, the white and yellow micrococci we mention may be considered synonymous with staphylococcus albus and staphylococcus aureus of other writers.

region of the withers, showing most extensively on the right side. On the left side the swelling was about the size of a man's fist. The two were apparently communicating. Upon aspirating the right with a trochar and canula, large lumps of coagulated lymph, together with clear serum, were drawn off. The treatment at first was to evacuate by means of trochar and canula, injecting tincture iodine into the abscess cavity, but this was finally abandoned and free incision of both sides of the withers resorted to. Tubes of bouillon and agar were inoculated from the pus first aspirated, but they remained sterile. A streptococcus and a white micrococcus were isolated from cultures made from the discharge after operation.

Case IV.—Clinic No. 2246, Feb. 5, 1900. Patient a brown horse, weight about 950 lbs., 10 years old; was bitten on the withers last autumn. A swelling of the part soon followed, which persisted till the time the case was presented at the college clinic.

The region of the withers was very much swollen, more so on the right side than the left, fluctuating and tender. Right side was punctured with a trochar and canula, and a large amount of coagulated lymph drawn off. Ten days later the right side was incised and the abscess found extending across to the left side, which was also freely opened in two places.

Tubes of bouillon and agar inoculated from the material aspirated when the abscess was first opened were not sterile in this case, but there were isolated from them a streptococcus, a white micrococcus and a yellow micrococcus. These same organisms were also isolated from cultures of the pus made after the abscess had been opened and suppurated freely.

Case V.—Clinic No. 2253, Feb. 9, 1900. Patient was a brown mare, 8 years old, weight 1050 lbs., used for general farm work. She was a half sister to the brown horse entered as clinic case 1958, poll-evil, Case VIII. These two animals worked together and were stabled together, but each had its own harness, and these were never interchanged. The swelling of the mare's withers was first noticed August 1, before the horse's poll was seen to be affected, but the swelling remained hard and did not seem tender. About three weeks before coming to the college clinic the swelling began to soften. The owner had had an old mare that had a swelling about the size of a goose egg on the neck, just back of the poll, but she was killed without any investigation as to the nature of the trouble being made. When the first mentioned brown mare was seen

at the college clinic, the enlargement of the withers was fluctuating and tender. This was incised and found to resemble a large lymph abscess, containing a large amount of coagulated lymph and purulent material. Tubes of bouillon and agar inoculated from this remained sterile. Tubes of bouillon and agar were inoculated from the pus after the abscess had been opened and suppurated freely. A streptococcus and a white micrococcus were isolated from these cultures.

Case VI.—Clinic No. 2430, April 24, 1900. Patient was a small bay mare, weight 900 lbs., 9 years old, and used for farm and road work. The trouble had existed for about four months. Owner claimed the case had never been operated upon, but there were three suspicious looking scars to contradict his statement. When first seen at the clinic the wound was discharging through an external opening at the centre of the external scapular region on the right side. Upon examination, after confining the animal upon the table, the fistulous tract was found to lead up over the cartilage of prolongation, then back three or four inches, also downward and forward on the median surface of the cartilage. There was a small sinus on the external surface of the cartilage, and also a cavity with a distinct sac, anterior to the scapula. All of these tracts were laid freely open to insure proper drainage. Tubes of bouillon and agar were inoculated from the discharge and from the wound after operation, and from these were isolated a streptococcus, a white micrococcus and a yellow micrococcus.

Case VII.—Clinic No. 2501, May 12, 1900. Patient, a black horse, weight 1000 lbs., 10 years old; had been running out all winter and when taken up about three weeks ago the enlargement on the withers was discovered. A blister was applied by the owner, but no opening made. When presented at the clinic there was a swelling on the right side of the withers about the size of a man's fist. Upon incising the swelling numerous fistulæ extending in different directions were found and laid open to insure drainage.

Tubes of bouillon and agar were inoculated from the pus, which remained sterile. A streptococcus and a white micrococcus were isolated from the pus after the wound had been opened some time.

Another affection closely allied to fistulous withers, although in our experience not so common, is that popularly known as poll-evil. From what we have learned of these two diseases

we believe their etiology and morbid anatomy to be very similar in character, the chief difference in them being in the seat of the lesion. Hence we have considered the two under one heading. We have had occasion to study but two of these cases during the past year, the notes on which are given.

Case VIII.—Clinic No. 1958, Oct. 10, 1899. Patient was a brown horse, weight 1100 lbs., 8 years old, and used for general farm work. Was castrated when two years old and since that time there has been a tumor in the scrotal region, but as this had never caused any inconvenience to the animal little attention was paid to it.

About August 1st there was noticed on the poll a swelling about half the size of a goose egg; this has gradually enlarged until at the present time the whole region of the poll is greatly swollen and discharging from two openings. Each side can be probed for a distance of two and one-half to three inches. From the tubes of bouillon and agar inoculated from the discharging pus were isolated a streptococcus and a white micrococcus.

Case IX.—Clinic No. 2443, April 27, 1900. The patient, a sorrel horse, weight 950 lbs., 14 years old, was trading stock and hence nothing was known of the history of the case. When presented at the clinic there was a small opening at a point on the second cervical vertebræ. This opening was enlarged to admit the finger and the fistulous tract found to extend about three inches posteriorly and also a short distance anteriorly. This was laid open for its whole extent. Tubes of bouillon and agar were inoculated from the discharge and a streptococcus and a white micrococcus were isolated therefrom.

BOTRYOMYCOSIS (SCIRRHOUS CORD AND SHOULDER ABSCESSES).

In the title we have classed scirrhous cord and deep shoulder abscesses together as botryomycosis. They seem to be the two commonest forms of this disease as it is described by those who have worked upon it.

Scirrhous cord is a disease which seems to be decreasing in prevalence as the more modern and scientific methods of aseptic and antiseptic castration are adopted. The duration of the disease often dates back to the time of operating; the wound never having healed completely, but a fistula remaining. On

the other hand, in older animals it often happens that nothing is noticed amiss until perhaps several years after castration. Scirrhous cord is capable of producing all degrees of disturbance, from simply a tumor in the groin or scrotum, causing a wide straddling gait, to a fatal pyæmia as noted in the two cases below, Nos. XI and XII.

Case X.—Clinic No. 1958, October 10, 1899. Patient, a brown horse, weight 1100 lbs., 8 years old (same as case VIII, poll-evil). Animal was castrated when two years old and since that time there has existed a tumor in the scrotal region, but this has never caused any inconvenience to the animal. The tumor was punctured with a trochar and canula and quite a quantity of serum drawn off. The tumor was then removed and found to be composed of the thickened walls of white fibrous tissue and containing some purulent débris within. Tubes of bouillon and agar were inoculated from the aspirated serum and from the pus within the cord. Tubes of bouillon and agar inoculated from the aspirated serum remained sterile as did also those inoculated from the interior of the cord.

Case XI.—Clinic No. 2016, October 26, 1899. Patient, a grey yearling colt, castrated by block method in May last. The wounds have never healed and at times the end of the cord may be seen projecting through the scrotal wound. Animal placed on the table, anæsthetized and the affected cords removed. Right one was the largest, being composed of tough white fibrous tissue. Upon section it was found to contain no pus, but was hæmorrhagic in the centre and in some places very dark and discolored as if necrotic. The condition of the left cord was about the same as the right, only not quite as bad. Tubes of bouillon and agar were inoculated from inside the cords after removing them. From these cultures were isolated a streptococcus and a white micrococcus.

This colt was returned December 4th, suffering from pneumonia and discharging a considerable amount of pus from the nostrils. Diagnosis was pulmonary abscess, and tracheotomy was performed and the lungs irrigated with peroxide of hydrogen. Media inoculated from the pus in the trachea gave pure cultures of a streptococcus. The post-mortem revealed the following lesions: at posterior border of the right lung was an abscess some fourteen inches in diameter and containing nearly five liters of sanguinous pus. There existed adhesions between

the lung, diaphragm and the liver. The abscess was limited posteriorly by the capsule of the liver, anteriorly by the diaphragm. Toward the inner margin of the right lung was a direct communication with a bronchus. Tubes of bouillon and agar were inoculated with the pus contained in this abscess and a streptococcus only isolated from these cultures.

Case XII.—Clinic No.. 2037, October 31, 1899. Patient, a black horse, weight about 1000 lbs., 6 years old, was brought to the clinic on account of his very poor condition. He was castrated when three years old and last April there appeared a swelling on right side of the sheath which broke and ran for about six days and then healed. About two weeks later it broke on the other side and has been discharging ever since. Animal stretches to urinate. A probe can be passed up the fistulous opening for at least ten inches and this is found to communicate inside with a lobulated tumor much larger and extending toward the external angle of the ilium.

These tumors could be located per rectum. The horse was put on a course of K. I., ℥i once (or twice) daily, and discontinued at intervals as bad effects were noticed. This treatment was continued from Nov. 1 to Jan. 22, when operation was resorted to. There was some diminution in size and softening of the tumors noticeable at this time. Animal was placed on the table, anæsthetized and the highest tumor on the right side opened by an incision through the abdominal wall about two inches anterior to the external angle of the ilium. A quantity of rich yellow pus was discharged. Tubes of bouillon and agar were inoculated from this pus and a yellow micrococcus isolated. Then a tumor on the floor of the pelvis was opened through the median line, but no pus discovered. Still another was opened by cutting through the flank and working up to it. This also contained no pus. These wounds were dressed by irrigating with sublimate solution till Feb. 25, when the horse was again subjected to operation. A tumor on the left side was reached through the inguinal ring, but it contained no pus. Horse was then rolled over on its right side, and a tumor not reached heretofore was opened and a large quantity of pus removed. This pus was of a very different character from that taken from the first abscess on this side, being creamy and not so yellow colored as the first. From cultures of this pus a streptococcus was isolated. Cultures made from the wound where the first abscess was opened contained in addition to the yellow micrococcus of the original pus, a streptococcus and white micrococcus. Cul-

tures from the suppurating wound where the second abscess was opened contained a white micrococcus and a streptococcus.

Upon post-mortem examination there were found a series of multiple abscesses, ranging in size from a hickory nut to a man's fist, located in the pelvic region, which had not been reached by previous operation. The tubes of bouillon and agar inoculated from one of the largest of these were pure cultures of a yellow micrococcus. The right kidney was the seat of a large abscess containing about a pint of pus. Pure cultures of a streptococcus were obtained from this pus.

Case XIII.—Clinic No. 2264, Feb. 16, 1900. Patient, a bay roadster colt eighteen months old, was castrated last spring by the clamp method. The wound healed readily, but the owner noticed the scrotal sac to be filled, as he supposed, with intestine. Upon examination the supposed intestine was found to be the tumefied cord with the end adherent to the skin. An incision was made at this point, the cord dissected from the surrounding tissues and removed with the emasculator. The wound was tamponaded with iodoform gauze and sutured. Following day the sutures were cut and the accumulated bloody serum removed. The cord was very much thickened and tumefied and composed principally of white fibrous tissue. Tubes of bouillon and agar inoculated from inside the cord after removal remained sterile. From tubes of bouillon and agar inoculated from the suppurating wound after the cords were removed, a streptococcus and white micrococcus were isolated.

Case XIV.—Clinic No. 2482, May 8, 1900. Patient, a bay cob, weight. 1000 lbs., eight years old; used only for carriage work. Was purchased in a pair six weeks ago as sound. Two days ago the owner noticed a swelling in the scrotum and some discharge therefrom. Horse has traveled peculiarly behind, previous to this time. Upon examination a large tumor is felt in the right groin, none in the left. No tumefaction felt inside by rectal examination. There was a small fistula in the right side of the scrotum, which discharged at intervals. The tumor was removed in the usual way. The tumefied walls of the cord were composed of glistening white fibrous tissue. Walls vary from one-quarter to one-half inch in thickness. Cavity running through the centre of the cord is about one-quarter of an inch in diameter. There were soft areas at certain points inside somewhat resembling actinomycosis.

Tubes of bouillon and agar inoculated from the discharge before operating developed into pure cultures of a white micro-

coccus. Those inoculated from inside the cord remained sterile. However, iodine had been injected before operation, which might account for this. Media inoculated from the wound three days after operation developed into cultures from which a streptococcus and white micrococcus were isolated.

Case XV.—Clinic No. 2491, May 10, 1900. Patient was a black gelding, weight 1050 lbs., 7 years old, and used for farm work. Was castrated when two years old, and nothing was noticed amiss until last fall, when a slight discharge was noticed after the horse had been lying down. Upon examination a hard tumor was found extending up in the groin to the external inguinal ring on the left side. Rectal examination revealed nothing except a slight dragging upon the spermatic artery and cord. The tumor was all extra-abdominal and about three by one and one-half inches in size. Upon cutting open after removal the walls were found thickened and composed of a thick white fibrous tissue with soft areas at points on the inside. Pure cultures of a yellow micrococcus were obtained from the pus contained in the abscess.

Case XVI.—Clinic No. 2529, May 18, 1900. Patient, a brown two-year-old colt; was castrated about a year ago. When seen in the clinic there was a soft tumor in the scrotum which evidently contained fluid. The cord was removed and found to be dropsical. The walls were not markedly thickened, but were distended to about the size of a large hen's egg with a serous fluid from which tubes of bouillon and agar were inoculated. These cultures remained sterile.

Here, in connection with scirrhous cords and deep shoulder abscesses, may be a proper place to discuss a disease which we know very little of and concerning which there seems to exist a diversity of opinion, viz.: botryomycosis. It is defined by Gould as "a disease of horses in which fibromatous nodules form in the lungs. It is dependent upon the presence of a micro-organism called botryomyces."

Jensen* considers it as closely allied to actinomycosis, and says regarding it: "Actinomycosis is found in man, cattle and swine and only in the horse by inoculation, while botryomycosis is peculiar to the horse, and after surveying the literature we find it only once observed in cattle. But like actino-

* *Zeitschrift für Thiermedicin*, Bd. XVIII.

mycosis it manifests itself as newly-formed tissue in the form of granulating nodes and nodules, in the centre of which is a disintegrating pus-like mass, and which is more or less surrounded by masses of embryonic tissue. The knots are in some cases well defined in their margins, while in other cases they are continuous with the surrounding tissue, without any distinct outline. As a rule the disease remains local and spreads only to the adjacent tissue. It has, however, been observed as metastatic in the internal organs."

Notwithstanding the fact that this affection has, from an early date, received the attention of a number of investigators, the classification of the specific cause has not as yet been made clear. All seem to agree that the disease is due to a micro-organism, spherical in shape and resembling micrococci in morphology, but they speak of it always as a fungus and not as a bacterium. Some have taken exception to this, however, and declare that they have found only the common pus cocci in the so-called botryomycotic lesions. In reviewing the literature available upon this subject we find Bollinger,* in 1870, the first to propose the name botryomycosis for a disease which he described as causing fibromatous nodules in the lungs of horses. The derivation of the word is from the Greek (*Βοτρυς*), a bunch of grapes, and (*μυκης*) a fungus. Bollinger's discovery was considered at that time as of little account. In 1878 Rivolta† found fungi in the spermatic cord of horses after castration, which he termed *discomycis equi*, and which he thought allied to actinomycosis. They soon came to be considered as belonging to the micrococci and not to the ray fungi. Rabe‡ described what he called *micrococcus botryogenus*, and Johne§ called them *micrococcus ascoformans.* Johne also proposed calling the neoplasm a mycofibrom or mycodermoid. Kitt‖

* *Virchow's Archives*, Bd. XLIX.

† *Giornale di Anatomia* and *Fisiologia*, 1884.

‡ *Deutsche Zeitschrift*, Bd. XII.

§ *Deutsche Zeitschrift*, Bd. XII.

‖ *Friedberger & Fröhner* (Hayes' Translation.)

obtained tufts closely resembling *staphylococcus aureus* from cultures of the supposed botryomyces and was able to produce the characteristic botryomycotic lesions in a horse by inoculations of a pure culture of this organism. Hell* considered the myces as simply tufts of pus cocci and bases his conclusion on the fact that in every case he isolated the *staphylococcus pyogenes* from the supposed botryomycotic lesion.

Contrary to Jensen, who says botryomycosis is peculiar to equines, Dr. G. Newman† speaks of botryomyces being found in the spermatic cord, skin, lungs and not rarely in the udder of horses and *cattle*. Also in the spermatic cord of pigs. Observers have found in horses new growths in the superior maxillary sinus and in the tail, multiple tumors extensively disseminated over the entire skin, implicating the subcutis, and infection of the muscles, bones, pluræ, and the connective tissue of the pelvic cavity, uterus, etc.

Jensen holds the commonest form of muscle botryomycosis to be the "Brust beule" with which all practitioners are familiar, as deep shoulder abscesses.

Our own experience has upheld the theory of Kitt and Hell, that the so-called botryomyces are simply tufts of pus-producing cocci. We have not had occasion to study the form described as affecting the lungs, but every case which we have seen that could be properly included in the category of botryomycosis, diagnosis to be based on the description of the lesions as given by other investigators, we have demonstrated to be associated with and probably due to pus cocci. We have been able to produce the characteristic lesions by inoculation of a pure culture of a yellow micrococcus, originally isolated from a case of what we understand as botryomycosis.

Case XVII.—Clinic No. 1967, Oct. 12, 1899. Patient, a grey horse, weight 1000 lbs., 8 years old; used for general farm work; had suffered for some time from a small bunch at the front of the right shoulder which became very much en-

* *Zeitschrift für Veterinail*, B I and II.

† *Friedberger & Fröhner* (Hayes' Translation.)

larged when worked with a collar. Upon examination a small tumor was found to exist just under the skin in the bearing region of the collar at the point of the shoulder and above the mastoido-humeralis muscle. This tumor was excised and found to contain but a scant amount of pus, from which tubes of bouillon and agar were inoculated. These cultures were pure of a yellow micrococcus. This organism proved to be pathogenic to rabbits, and pure cultures inoculated into two different horses produced extensive abscess formation at the points of inoculation, viz., point of the shoulder, withers and gluteal region.

Case XVIII.—Clinic No. 2140, Dec. 4, 1899. Patient, a brown gelding, weight 1000 lbs., 8 years old; used for general farm work. About May 1st some swelling was noticed at the point of the left shoulder. The horse has worked regularly ever since. When presented at the clinic there was a swelling about the size of a goose egg at the point of the shoulder. There was also fluctuation beneath the mastoido-humeralis muscle. Incision was made at this point and a pus cavity situated deeply between the muscles evacuated and about a large thimbleful of a rich yellow pus obtained, from which tubes of bouillon were inoculated. These were pure cultures of a yellow micrococcus.

Case XIX.—Clinic No. 2185, Jan. 4, 1900. Patient, a grey mare, weight 1000 lbs., 7 years old; has been worked in team at farm work and hauling. Two weeks before examined in clinic marked swelling and tenderness under the collar at the point of the shoulder was noticed, but the animal was continued in work. When seen at the clinic there was considerable swelling at the point of the right shoulder, hard and exceedingly tender. It was freely incised, and after cutting through about two inches of muscles two separate cavities were evacuated of a small amount of pus, from which tubes of bouillon and agar were inoculated. These developed and gave pure cultures of a yellow micrococcus.

Case XX.—Clinic No. 2204, Jan. 13, 1900. Patient, a brown horse, weight 1050 lbs., 8 years old, and used for general farm work. Has been hauling logs all winter and about two weeks previous a swelling the size of two fists was noticed at the point of the right shoulder and has been increasing ever since. Animal was laid up and kept on straw after this swelling appeared. When first seen in the clinic there was an enlargement on the right shoulder the size of a four-quart measure in front of the scapulo-humeral articulation. Swelling extends up the

neck ten inches from the point of the shoulder. Is hard and tender. Incised for about four inches. Incision carried through the muscle till the pus cavity was reached and about half a pint of pus obtained, from which tubes of bouillon and agar were inoculated. These developed into pure cultures of a yellow micrococcus.

Case XXI.—Clinic No. 2519, May 5, 1900. Patient, a brown mare, weight 1050 lbs., 10 years old ; used for driving and general farm work. Three weeks prior to the time the case was first seen in the clinic, tenderness of the right shoulder began to cause trouble. This gradually increased until at the present time there is a bare area about the size of a dollar and a prominent swelling some three by six inches at the point of the shoulder. Incised freely, avoiding the bare spot and a considerable amount of coagulated lymph and purulent material removed, from which tubes of bouillon and agar were inoculated. These developed into pure cultures of a yellow micrococcus.

INFECTED WOUNDS.

In open infected wounds the infecting organisms may already be present upon or in the deeper layers of the skin. The same may be true of infected operative wounds, or we may have the organisms introduced with the hands or instruments of the operator. The four open wounds examined were inflicted by kicks from other animals and had suppurated when first seen. Of the four operative wounds examined three were expected on account of aseptic methods used to heal by first intention and the fourth by granulation.

Case XXII.—Clinic No. 2190, Jan. 5, 1900. Patient was a bay mare, weight 1000 lbs., 9 years old. Had been running at pasture with her mate and was found with a very tender swelling at the angle of the lower-maxilla. The swelling became very extensive until incision, Nov. 1st, when it broke, discharging considerable foul pus. When examined in the clinic there were two fistulæ found discharging ; one penetrating the external plate of the infra-maxilla and permitting the passage of a probe which can be passed both upward and downward for three or four inches. Tubes of bouillon and agar were inoculated from the pus discharging. From these cultures a streptococcus and a white micrococcus were isolated.

Case XXIII.—Clinic No. 2317, March 12, 1900. Patient was a bay horse, weight 1100 lbs., 12 years old, and used for

farm work. Was discovered in the morning with a lacerated wound in the posterior part of the thigh, but the owner had no idea how it happened. After treating it himself for a week he presented it at the clinic. There existed a ragged wound some four inches in extent and implicating the semi-membranosis and semi-tendinosis muscles; contained a large amount of necrotic tissue. Tubes of bouillon and agar were inoculated from the discharge. Isolated a streptococcus and white micrococcus from these cultures.

Case XXIV.—Clinic No. 2343, March 22, 1900. Patient was a bay horse, weight 1100 lbs., 11 years old; used for farm work. This animal and his mate occupy stalls adjacent and they got to kicking in the night. When discovered in the morning this one had a wound on the right side of the ischium which cut loose a large flap of skin. The long vastus muscle was also lacerated but not very deeply. Also a wound on the right side of the hock. Tubes of bouillon and agar were inoculated from the wound, which was suppurating and from these cultures a streptococcus and a white micrococcus were isolated.

Case XXV.—Clinic No. 2344, March 22, 1900. Patient was a bay horse, weight 1100 lbs., 12 years old, and used for farm work. Is mate to clinic case No. 2343. As a result of the kicking, this horse had a cut on the side of the tail about two and one-half by two inches and quite deep, also a cut four inches long passing through the skin, aponeurosis and into the long vastus. Also several scratches on the skin and a wound on the head of the tibia in front, the skin being broken and some indications of a cracked tibia. Tubes of bouillon and agar were inoculated from the suppurating wounds. From these a streptococcus and a white micrococcus were isolated.

Case XXVI.—Clinic No. 2021, October 27, 1900. Patient was a bay pony, weight 800 lbs., 6 years old; used for driving and saddle purposes. Brought to the clinic suffering from double navicular disease, for neurectomy. The operation was performed under aseptic precautions and wound gelatin applied instead of bandages. The wound suppurated and tubes of bouillon and agar were inoculated from the pus. A streptococcus and a white micrococcus were isolated from the cultures.

Case XXVII.—Clinic No. 2145, December 5, 1899. Patient, a brown pacing horse, weight 1000 lbs., 10 years old. Has considerable speed and has been used for light driving as well as some track work. Presented at the clinic, to be operated upon, suffering from double navicular disease. Low neurectomy was

performed, the horse being confined on the table and the pastern having been bandaged in sublimate solution for 12 hours previous to the operation which was conducted under strict aseptic precautions. The wound was sutured and bandaged with packs of sublimate. There was not much evidence of suppuration following the operation, but three days afterward tubes of bouillon and agar were inoculated from one of the wounds which did not heal as readily as the others. These cultures were pure of a white micrococcus.

Case XXVIII.— Clinic No. (Subject.) Jan. 1, 1900. Patient was an old bay horse obtained for dissection. The right prescapular nerve was sectioned for experimental purposes, which necessitated an incision about three inches in length. Although antiseptic precautions were taken the wound suppurated. The region of the wound was swollen and tender and upon removing the sutures there was quite a little pus discharged, from which tubes of bouillon and agar were inoculated. From these cultures were isolated a streptococcus and a white micrococcus.

Case XXIX.—Clinic No. 2422, Patient, a black horse, weight 1250 lbs., was operated upon for roaring and tracheotomy performed, and a tube left in to facilitate breathing while the operative wound in the larynx was healing. The wound in the trachea suppurated considerably and tubes of bouillon and agar were inoculated from the discharge. From these were isolated a streptococcus and a white micrococcus.

Since the destruction of the bacteria over the field of operation as well as on the hands and instruments of the operator is of such fundamental importance in surgical technique, it is essential that we know something of the bacteria commonly or occasionally found on or in the healthy skin. As the skin is so exposed to contamination from the air and external sources generally, we might expect almost any species of organism to have their habitat there, and such is found to be the case by those who have worked on this subject. In 1891 Dr. Wm. H. Welch*, of Johns Hopkins University, called attention to a species of bacteria, which is found with such regularity in cultures from the skin of man, that it may be properly regarded as a regular inhabitant of the normal skin. To this organism Welch gave

* Dennis' System of Surgery, Vol. I.

the name of *staphylococcus Epidermidis albus.* One of its most important characteristics is that it is almost constantly present in the deeper layers of epidermis along the hair shafts. Hence we can understand why absolute disinfection of the skin is impossible, although for all practical purposes it may be accomplished. To ascertain something of the existing condition in the horse's skin, the following procedure was carried out :

Subject was an aged sorrel horse. An area at the point of the shoulder was shaved, washed and then disinfected thoroughly with sublimate solution, and two sutures (*a* and *b*) laid, leaving about one-half inch imbedded in the skin. The needles and suture material were sterilized by boiling, and throughout the whole operation the greatest precautions were taken to maintain strict asepsis. To complete these measures the sutures and parts included by them were coated with collodion to prevent infection along the track of the sutures from the outside. After remaining for 48 hours, during which time very little swelling and no evidence of suppuration, nor much soreness in the part were noticed, the sutures were removed, and the parts having been buried in the skin were dropped in tubes of bouillon. The suture was not much altered from its condition when put in ; was saturated to some extent with serum, but no sign of pus formation. Tube (*a*) remained sterile. Plate cultures from tube (*b*) developed white, orange and bright lemon-colored colonies of micrococci.

Cultures were also made from the skin after having been thoroughly disinfected preparatory to castration. The whole inguinal region was washed with soap and water, then disinfected with sublimate solution. After making the incision through the scrotum a little strip of skin from the edge of the wound was dropped in bouillon. Of seven cases studied, a white micrococcus was isolated from each case. The only difference noted between this organism and that isolated from fistulous withers, poll-evil and open wounds generally, was that it was arranged singly and in pairs, chiefly, and not in clumps, as was often the case with the others.

TABLE OF BACTERIAL FINDINGS.

Disease.	Cases.	Organisms Isolated.
Fistulous Withers . .	1, 2, 3, 5, 7	Streptococcus and white micrococcus.
	4 and 6	Streptococcus, white micrococcus and yellow micrococcus.
Poll-Evil	8 and 9	Streptococcus and white micrococcus.
Scirrhous Cord . . .	10 and 16	Sterile.
	11	Streptococcus and white micrococcus.
	12	Streptococcus and yellow micrococcus
	13	Cultures from inside cord sterile. From suppurating wound after removing cord, streptococcus and white micrococcus.
	14	Discharge before operation — white micrococcus. Sterile from inside cord. Iodine had been injected prior to operation. Three days after operation in suppurating wound a streptococcus and white micrococcus.
	15	Yellow micrococcus.
Deep shoulder abscesses	17, 18, 19, 20, 21	Yellow micrococcus.
Infected open wounds	22, 23, 24, 25	Streptococcus and white micrococcus.
Infected operation wounds	26, 28, 29	Streptococcus and white micrococcus.
	27	White micrococcus.

SUMMARY.

I. From seven cases of fistulous withers we have isolated three varieties of organisms, a streptococcus, a yellow and a white micrococcus. In two of the seven cases all three of these organisms were found and in the remaining five a streptococcus and white micrococcus only. It is important to note that the streptococcus has been present and in predominating numbers in all of the cases. Five of the seven cases of fistulous withers had not discharged when presented at the college clinic, nor was there any external opening, except in the first case, where there were two distinct abscesses, one discharging and one not. Of these five cases three contained no living organisms, as media inoculated from them remained sterile. Hence the organisms

recorded as having been associated with these lesions were only found after operation.

II. In two cases of poll-evil we found a streptococcus and a white micrococcus in each.

III. In seven cases of scirrhous cord three varieties of organisms were isolated: a streptococcus, white and yellow micrococcus. A streptococcus and white micrococcus in one case. Streptococcus and yellow micrococcus in one case; white micrococcus only in one case, yellow micrococcus alone in one case and in three cases cultures from inside the cord remained sterile. In two cases cultures were made from the suppurating wounds after removal of the cords and a streptococcus and white micrococcus isolated in each case.

IV. In five cases of deep shoulder abscesses a yellow micrococcus was isolated from each case.

V. In infected open wounds a streptococcus and white micrococcus were isolated in each of four cases.

VI. In infected operative wounds a streptococcus and white micrococcus in three cases and a white micrococcus only in one case.

VII. We have isolated from a perfectly normal skin the same organisms that we encounter in the various wound infections.

VIII. The white micrococcus we have found associated with the other organisms in these infections, we have found constantly present in the horse's skin even after attempted disinfection.

In drawing our conclusions, we must bear in mind the danger of attaching too much importance to the apparent relation existing between the lesions and the species of bacteria associated with them. However, we have found certain organisms appearing with such regularity in certain of the more common infections, that we feel justified in suspecting some causal relation between the organism and the disease.

But although the above facts do not furnish conclusive evidence concerning the causative factors operating in the

various wound infections, they must be of some significance in throwing their weight of evidence on the side of some previous investigations and possibly prove an incentive to further work on this subject.

TRICHINA.

A THESIS PRESENTED TO THE FACULTY OF THE MCKILLIP VETERINARY COLLEGE BY B. O. MINGE.

The worm *trichina* was discovered about 1828. It has been thoroughly investigated and studied since that date. Trichina is an animal parasite that is found in all animals. It is a small worm, which when in the larval state is parasitic, both in the muscles and in the walls of the intestines of man and the pig. It produces a disease known as trichinosis, or trichiniasis, which is nearly always fatal in man and in the pig. There is only the well-known species *trichina spiralis.* This you might say constitutes the family of the *trichinidæ.* When in the adult state the trichinæ are found in the intestines alone; furthermore, they are not visible to the naked eye.

Commencing at the middle of its body it gradually tapers to a point. The skin of the parasite is very smooth and even. The mouth is terminal, small, and has no projection. It is provided with a digestive tube, which comprises (1) a buccal intestine, (2) a middle intestine, and (3) a terminal intestine. The male trichina is distinguished from the female by having at its posterior end two digiform appendages on each side of the cloaca. The male trichina is from 1.4 nmr. to 1.6 nmr. long, 40 u. wide. At the time of sexual intercourse the cloaca is everted and acts as a copulatory organ. The male reproduces by the testicular tube, which doubles back upon itself and ends in a canal. This canal opens into the cloaca at the same time the intestine does. The female trichina is 3 nmr. long, 60 w. wide. It has only one ovary, which is composed of a tube that begins as a cæcum near the anus and runs up to

the anterior fifth of the body, opening at the vulva. The cæcal portion serves as an ovary, then a constriction, an oviduct, a wide dilatation, a uterus, a vagina, and finally the vulva. The young ova develops in the uterus, and is said to be mature when 20 u. in diameter. After the ova is hatched the embryo finds its way into the vagina, from the vagina it escapes through the vulva. Trichinæ, when in the larval state, are found in the intermuscular connective tissue, in the primary bundles of the muscles, and sometimes in the walls of the intestines. They are found in the shape of the letter S, or in a spiral, resembling the adult very closely in nearly every feature.

It was not until the year 1828 that the first trichina was positively discovered. It was in London at Guy's Hospital when the first case of trichina was discovered, Peacock being the first one to discover trichina. Since that time a great many cases have been observed. In 1832 it was found by Hilton, he being a demonstrator of anatomy in Guy's Hospital, London. He found them in the body of a very aged man, and existing in the form of a cyst. At first the question was undecided whether or not it was the trichina cyst, but later on, after thorough examination, the cysts were found to be the trichina cysts. In the latter part of 1835, there were pieces of muscles examined by Wormald and Paget at the St. Bartholomew's Hospital. White spots were found in the muscles, thus deriving the name of nematodes, which, they said, were coiled back upon themselves. Owen studied upon this field of muscle and finally gave it the name trichina spiralis. There elapsed a period of twenty-five years before the study of trichina was again renewed. There was an epidemic of trichinosis in Germany in 1859; then several experiments were carried on by great scientific men. For instance, Virchow gave a dog some of the human muscles which were invaded with trichina. In three and a half days he found in the small intestines worms which resembled the trichina, but were larger and nearly egg-shaped. The same experiment was repeated a few months later by Leuckart, though his experiment was by no means

what would be termed a successful one. He was entirely wrong in mistaking something else for trichinæ. Leuckart's experiments were made upon the pig. But not being careful in the selection of infested food, with which he made experiments, he failed. Following Leuckart's experiment Professor Zenker made an autopsy of a young woman, who was thought to have died with typhoid fever. In the muscles and intestines of the woman were found great numbers of trichina, in the free state, larval state, and in the encysted state. At first it was undecided whether the worm found was trichina or not, but after a number of experiments it was found to be trichina. It was discovered that the young woman had eaten flesh of pork that was infested with trichina. A piece of the same pork that was eaten by the young woman was given to several mammals along with their food, and in each case the mammals proved to have trichinosis. There were a great many scientific men who examined the muscles of this young woman, and all found that she had eaten infested flesh.

Trichinæ in pigs in America were not discovered until 1847. Experiments were made with the pig and they proved that if the pig be fed with infested flesh it will itself become infested. Very little was ever known of trichina up to the time of the studies and researches of Zenker in 1860. Since that time there has been great progress made in the study of trichinæ. From this, great improvements were made in the sanitary measures of dealing with trichina. Virchow, Leuckart, Bohes, Welpech, Colin, and various others should be named in the list of those who searched for trichina.

Speaking of animals that are susceptible to trichina, we can frame our answer in a nutshell, by stating that all animals are susceptible to trichina, though some have it in a much severer form than others, because some animals are not as susceptible as other animals. Man, rat and pig are the animals that are the most easily susceptible to trichina. All are susceptible in the following order: Man, pig, wild boar, rat, mouse, Norway rat, guinea pig, rabbit, hippopotamus, calf, lamb, horse,

dog, fox, cat, raccoon, bear, mole, hedgehog, etc. Birds are also very susceptible to trichina. As has been previously stated the adult trichina is found principally in the small intestines of mammals and birds. To begin with, all mammals and birds which are found to be infested with trichina, must have first eaten the infested flesh. Trichinæ are found in the large and small intestines, but they are found more frequently in the small intestines. Those mammals in which trichinæ are most commonly found are, man, pig, etc., and in the intestines of birds. The bird is not a favorable subject for the development of trichinæ in the encysted state, because the cyst may pass through the digestive canal, and never undergo any change. The larva which are deposited by the worm is never developed in the digestive canal, but more usually in the intestines. When one of the mammals eat a piece of infested flesh, the muscular trichinæ are encysted, the gastric juice dissolves the cyst, and the worms are set free. The fourth day after the worms have been set free, larvæ will have undergone a systematic change into the adult forms.

In testing for the adult a microscope having a magnifying power of 75 to 150 diameters is used; the intestines being examined under this microscope. It is not until the seventh or eighth day that the intestinal trichinosis is noticed. The females lives are of a longer duration than the males. It has been proven that one individual may produce from 10,000 to 15,000 embryos. The embryos that are deposited in the intestines are not developed until they have worked their way into the striped muscles and connective tissue of the body. The trichina that is found in the lymphatic glands is believed to have been brought there by the lymphatic vessels. Nevertheless, there are several different ways by which the trichinæ may be distributed through the body. There are parasitic nematodes of certain vertebrates which have been very often mistaken for trichinæ. The larval trichina has been found by experts to exist in the fat as well as in the muscles of animals. When the sixth day has been reached the larval trichinæ will

be found curved in a loose loop, in the shape of the figure 3; or in a spiral. They remain in this form until they pass in the encysted stage. Trichinæ pass through the soft myolemma and thus change into a cellular sheath.

The cyst is at first very soft and thin, but gradually thickens, thus becoming transparent and homogeneous, forming two poles. By the assistance of these poles the cyst is separated from the surrounding tissues. There are various ways of finding the cyst while under different conditions. Generally the cyst has the appearance of a lemon, although it is sometimes found in different forms, the large axis being parallel with the muscular fibres. Length 30 to 50 mnr, breadth 20 to 40 mnr. The trichina in the definitively constituted cyst is in a dormant condition. Corpuscles are added, thus changing the pigment granules, from a yellow to a brown. The tissue of the cyst may undergo fatty or calcareous degeneration. Fatty degeneration is defined by the forming of small fatty granules in the interior of the cyst cells. When the fat granules have been set free and invaded the cyst, the calcareous degeneration begins. No traces of nutrition in the cyst have been observed, but it can be seen that carbonate and phosphate of lime are formed in layers in the interior of the cyst, thus rendering the cyst opaque. This calcification is not frequently formed, because it takes about seven months after infestation, and the animal is usually killed before that time. Trichinæ more than 13 years old have been found in man—even as old as 20 years. These trichinæ were said to have been living, and would have answered for experimental purposes. It has not been proven that any new infestation would or did take place during observation. Occasionally in the infested muscles there will be found fatty pigmentary or calcareous degenerations.

A cyst leads to a fat deposit which first appears at one pole and takes on a new formation. Trichinæ when arrested in this state appear as fatty masses containing very little protoplasm, and can only be located by a fatty cluster. In the fatty clusters is found the worm in the embryonic state, which very seldom

lives. The trichinæ are also found at the long insertions and near the extremities of the muscles. The muscles in which trichinæ are found are classed according to the frequency of infestations; the diaphragm, especially its pillars; the muscles of the shoulders; the psoas muscles, and those of the cæcal region; neck, tongue, cheeks, eye, and abdomen, flexors of the thigh, neck, intercostals, back, and the heart.

Man is infested with trichina by eating pork which is infested, thereby causing trichinosis in man. The pig is infested by eating trichinosed animals, such as the rat, mouse, etc. The bodies of these small animals are very susceptible to trichinosis. When killed or found dead they are thrown into the manure pile, and the pigs feeding on the manure necessarily feed upon the bodies of the dead rats, etc. The rats are said to eat the droppings from the infested pigs and man, thereby becoming themselves infested with the worm. One of the great problems to-day is to decide which is the original host of trichina, the rat or the pig. It has been found in the black rat and the pig all over the world. It is believed to have been brought into this country by the rats getting into the ships, thus crossing the ocean, in that way or manner getting into the United States.

There are more trichinæ found in the pig than in any other animal, and consequently the symptoms will apply more to the pig than any other particular animal. Some animals are very often passed over when they have a small infestation, being noticed only when a number of trichinæ are infested. The first symptoms are those related to the intestinal trichinosis: Depression of the head, thirstiness, fever, dullness, grinding of the teeth, more or less inappetence for food, and a glassy appearance of the eye. The abdomen is retracted and very painful upon pressure, arching of the back, and lastly a very severe case of diarrhœa, which lasts the pig some time. These are only the minor symptoms, which last for a month or more. These are similar to the symptoms of some other well-known diseases, as enteritis, rheumatism, etc. Muscular trichinosis appears from the 10th to the 15th day; the symptoms are: The appetite be-

gins to return, the movements of the hind quarters are very stiff, mastication is difficult, the voice is husky, the muscular masses are painful, the pig will lie extended on its side, alvine ejections are passed involuntarily. In the last stages, œdema is found in different parts of the body, and is the cause of death. The symptoms will only be found when there is an extraordinary number of trichinæ ingested. When there is a small number ingested it is not dangerous, and the pig may recover, but remains lazy and sluggish. Also the pig will fatten. The diagnosis of a case of trichina is only aided by the use of Drechunes' histological punch, or Middledropf's trocar. By either of the above-named instruments a person is enabled to draw a portion of the muscles from the hind quarters of the living pig. With this portion of muscle an examination can be made for trichinæ. There is no very great danger in this operation. To make a thorough diagnosis of a case it requires the closest attention. There are cases of trichina that are never noticed, and the pig fattens all the time. It is principally observed when man eats the infested pork and develops a case of trichinosis. It is very important that some means should be discovered by which it could be cured, thus destroying the muscular parasites. It is, though, relieved to a certain extent by prophylactic measures. The only treatment for trichinosis is preventive treatment. Be very careful that the pig does not receive any raw slops or bodies of rats. The extent of trichinosis in the United States is caused by the food the pigs receive, that is, the waste matter of all kinds, etc., which are very favorable for the development of trichinæ. The increase of trichina is also due to their remarkable vitality ; thus it is very important to know if the trichinæ are dead or alive. This may be ascertained either : (1) By heating the trichinæ, which are placed on a platinum plate and heated to a temperature of 35 degrees to 40 degrees C., or (2) By giving infested flesh to an animal that it will develop in two or three days. In the first case, if the trichinæ are living they will be seen moving. In the second, the trichinæ will develop in the intestines; the male and female will be formed ;

that is, if the flesh contains living nematodes. If the trichinæ are dead they will be motionless, and the cyst will be dissolved. It is best to experiment on some small animal, as the bird. In the bird you have a small amount of gastric juice; this makes it somewhat disadvantageous. The sparrow is a very nice bird to experiment with; feed it on infested meat; then after 10 hours kill it, and make a thorough examination of the small intestines. If the trichinæ are dead or alive they will follow the second test, as previously spoken of. By the use of methylanlin violet, picrocasminate of ammonia, aniline blue, as stains, the living not staining in any way, while the dead become tinted. A great many experiments have been made by prominent men upon the subject of the amount of heat it would take to kill the trichinæ in a piece of meat. It was found to be about 55 degrees C. In boiling meats it should always take from one and one-half hours to three hours to kill the trichinæ in a piece of meat. The time required varies with the size of meat to be cooked. Trichinæ are killed by cold as well as by heat; the temperature for cold is about 14 degrees or 15 degrees C. It will be less when the meat has been previously treated with salt. In itself salt applied often enough and long enough will kill trichinæ in meat. After the animal has been killed it is always marked with more or less enteritis and peritonitis. To find the embryonic trichina it is best to make a microscopical examination. In muscular trichinosis the lesions consist of cysts large enough to be seen with the naked eye, and also the calcified cyst. If the affection has become chronic it will be impossible to see the calcified cysts in lard, therefore it is very necessary to make a microscopical examination. Cut a small piece of meat parallel with the direction of the fibres; first steep it with water and place on a slide, cover with a cover glass and put under the microscope. The preparation can be examined in a 75 per cent. solution of common salt, 001-5 per cent. solution of acetic acid. Very often calcareous tubercules are mistaken for calcified trichina because they are very much alike.

Meat is inspected for the sake of getting fine meat, that is, meat free from trichinæ and various impurities.

Take the pork of our own country or any other country. When we eat it we have no idea what we are eating. There are two phases of trichinosis: (1) Intestinal; (2) Muscular. The intestinal phase is shown by fever, thirst, prostration, want of appetite, spasms of the throat, very heavy perspirations, fullness at the stomach, and sensations of malaise; these are the most important symptoms of this phase. The muscular phase is shown by swelling of the limbs, puffiness of the face, accompanied by pruritis and formication; the muscles become very painful, contraction in the flexors, deafness, and finally bronchopneumonia, which is sure death. Trichinosis is usually epidemic.

In 1879 there were about eleven million hogs killed, Chicago furnishing half this number. Half this number were exported to foreign countries. On account of poor packing the trichinæ were not killed. From this some of the foreign countries passed a law prohibiting American pork being brought into the country. American pork has given rise to a great many questions, especially the demand for public health. This demand has brought about the microscopical examination of the dead animal at the port of export and import. There are three ways of judging: (1) Judging by lot. (2) Judging the lot. (3) Judging by piece. Judging by lot is to take pieces from here and there and examining them; if infested, reject the entire lot. In judging the lot every box or barrel is examined; if one piece is infested, reject the lot. This is recommended to be the best method in order to keep down fraud. In judging every piece, all the infested pieces are thrown out and the good ones kept.

A large staff is required in order to do the work. It is impossible to make every examination correct, because sometimes the trichinæ are not fully developed. It is then very hard to distinguish it. Sometimes it slips the inspectors, and then the blame is laid on American pork. For instance, take the case

of the boy on the Cornwall. His death was said to be due to eating American pork infested with trichinæ, but after his death it was found to be something different and belonging to a different family.

When the idea of thorough cooking is impressed on the people and the introduction of what is known as "fully cured" meat, there will not be any more danger. When a piece of meat is condemned it should be treated with a solution of carbolic acid, petroleum, etc., for the purpose of destroying it, so it cannot be used in any way.

ACUTE INDIGESTION.

By W. B. Switzer, V. S., Oswego, N. Y.

Read before the New York State Veterinary Medical Society, September, 1900.

Mr. President and Fellow Practitioners:

Some time ago I received a communication from our worthy Secretary, asking me to prepare a paper for this occasion. My first thought was to reply at once, and respectfully decline, but having a deep interest in the prosperity of this organization, upon further consideration, I felt that it was but just that I should do my part, as best I could, and therefore beg to present to you a few of my thoughts and observations upon the subject of acute indigestion.

As you are all perfectly aware, this is one of the most prevalent as well as one of the most fatal diseases with which we come in contact, and in presenting this paper before you to-day I do not hope to offer any new mode of treatment, or suggest any new thoughts or ideas to a body like this, composed of so many whose years of practice so far outnumber my own, but realizing that it is a subject of the greatest importance, not only to every member of our profession, but also to our patrons, I have hoped that, by bringing it before you, a discussion of the subject might be aroused which would prove beneficial, not only to myself, but also to many others present.

The symptoms and causes of this common disease are too

well known to make it necessary for me to enumerate them here, therefore I beg to briefly call your attention to some facts in connection with the treatment, realizing, as I do, that this must be varied according to stage and condition of the patient.

Every practitioner is well aware, although I regret to state that some do not always act as if they were, that the only way to cure disease is to remove from the system the cause of same.

Indigestion only comes on when the digestive organs fail to do the work they are called upon to perform. This may be brought about by either of two principal causes. First, a gradual loss of vitality until the organs are unable to accomplish their mission, and from some minor cause the digestive process ceases, and we have a well-marked case of acute indigestion. Then again the same thing may occur by suddenly overtaxing these organs, as by feeding a greater amount of food than the animal is in the habit of receiving.

In the great majority of cases we discover a fermenting process with more or less gas, in which case we should first direct our attention to destroying the gases and preventing further formation of same. After which we should proceed to restore active digestion, giving careful attention to the diet for some time after the appetite is restored.

Then again we get cases where the undigested food causes spasms; then, of course, our first effort would be to relieve the spasms by the use of some of the many antispasmodics, and the use of soothing drenches, such as flaxseed gruel, slippery elm tea, etc., always giving remedies a reasonable length of time to do their work.

But I imagine I hear some one say "these mild remedies will not always answer;" this I fully realize, and we must be ever ready to meet emergencies with the more active remedies, such as aloes, eserine and pilocarpine, or berian chloride. And in extremely bad cases the use of the trocar and canula and probang.

In connection with this, perhaps it might not be out of place

to give an account of a case which I was recently called upon to treat.

The patient was a carriage horse, owned by C. A. Sherridan, M.D., of Oswego. On the evening of January 28, 1900, I was called to the boarding stable, where the horse was kept, and found him suffering with a very severe attack of acute indigestion. I learned upon inquiry that the Doctor had been driving quite late, and that the horse being fed at once upon coming in, had eaten his feed but had been almost immediately taken sick. When I arrived he was regurgitating gas from the stomach to a degree that I had never seen before.

I undertook to administer a dose of aromatic spirits of ammonia in a capsule, but he could not swallow it, but when partly swallowed he would expel it with great force. After two or three unsuccessful attempts with this, I tried ether in a drench, but with the same result, the horse rapidly getting worse, and so I concluded to pass the probang, which I did, holding the mouth open with the speculum.

As soon as the probang reached the stomach the horse received instantaneous relief, as the gas rushed out through the tube in a great volume. When it ceased I cautiously withdrew the probang when, to my great surprise, a large stream of blood followed, coming through the mouth and nostrils. The horse staggered and fell, came to his feet again, reeled around the box stall, reared up on his haunches, throwing his nose over the partition in such shape that he was in a perpendicular position in the corner of the stall, blowing blood all over everything around him.

Just then his owner, the Doctor, came in, and I told him I thought the end was not far off. While we stood watching him he fell over, and giving one or two convulsive struggles, came to his feet and soon became more quiet. After waiting a few moments I succeeded in administering a dose of oil of turpentine, soon following that with a dose of snlphuric ether. He gradually improved and in three or four days had made a complete recovery.

I do not approve of the indiscriminate use of opiates and physics in the treatment of acute indigestion. We are often called to attend a case where some one has already given tr. opia 2 oz., or a large dose of physic, possibly both. I find that many are in the habit of at once giving one or both of the above mentioned remedies.

It has been my experience that this treatment fails to produce the results desired. For instance, we cannot expect to get the good results from a dose of physic, given to an animal when the stomach and bowels are distended and the fermenting process is still going on, that we would get if we first correct this condition. Not only this, but in many cases, the physic is not called for at all.

As regards the use of opiates, the administration of same at the early stage of a disease will almost invariably dull the sensibility and thus relieve the pain for a certain length of time; but when they have ceased to exert this stupefying influence, the horse is as bad as ever, and they have only served a temporary purpose, while the doctor has been thrown into the dark, if not entirely deceived, as to the true condition of his patient through the dulling of the sensibilities of the horse, thereby placing him in a condition where he is unable to reveal his true symptoms.

After we are well satisfied of the true condition, if the pain is so great that we feel justified in giving an anodyne, I prefer either cannabis indica, or chloral hydrate, as they have no constipating effect, as so many opiates have.

And now, gentlemen, appreciating that this paper is somewhat crude and incomplete, yet I trust that a healthy discussion of the subject may be aroused from which we shall all derive much benefit.

"I have been a regular subscriber to the REVIEW for the last couple of years, and find that frequently one article is worth double the price of a year's subscription."—*E. A. Richardson, V. S., Marcus, Ia.* [This extract is printed as a sample of many from subscribers in all sections.]

ACTINOMYCOSIS.

By W. C. Hanawalt, V. S., Sheffield, Illinois.

Read before the Annual Meeting of the Illinois State Veterinary Medical Association, November 15, 1900.

In bringing this subject before you it is not my desire to advance anything new as to the disease in itself, but to give a treatment which has proved successful in a very large per cent. of cases in my practice.

As we all know, it is very hard to tell, when dissecting these actinomycotic tumors, when we have all the affected tissue removed. And, again, when we remove these enlargements with the knife it is so easy to think the work well done, and desist, leaving the fresh sore covered, as it were, with actinomyces, which find lodgment in the flesh and soon develop new abscesses. You at first might think that to leave a wound of one's own making thus infected would be poor surgery, but I will say for myself I have seen this very mishap occur in my practice after dusting the raw surface with powdered corrosive sublimate, thus leaving no doubt in my mind that the proper way to remove such tumors and abscesses is not with the knife.

My attention was first directed to caustics by a report from the Ohio Experiment Station by Dr. H. J. Detmers, State Veterinarian for Ohio, some nine or ten years ago or more, in which he recommended an admixture of arsenic, caustic potash and gum acacæ, as a mixture to remove the tumors without the scalpel, and I am glad to say that I consider his formula a good one. The only objection is the slow and lingering slough.

The treatment I advise is chromic acid. Take, say, one dram of chromic acid crystals, by measure, and two ounces of water, making an average solution. Open the abscess enough to insert the index finger, with this remove the pus and cauliflower growth, which you must break down as much as possible. Now take a small wad of absorbent cotton with your pincers, dip it into the solution, squeeze out enough so it will not drip, and introduce it into the cavity you previously made

into the tumor and take a stitch or two to hold it in. This will penetrate into the tissues from a half to an inch deep, into a small or young tumor. For a large, hard, woody, old tumor, I would advise a stronger solution of the acid. In about six or seven days this will detach the healthy from cauterized portion and leave a clean, healthy, granulating wound, which will heal readily, with but little care and remedies, and leave little or no cicatrix. Some care and judgment must be used in the strength of this solution, or it may cauterize more deeply than desired in regions of the gullet, trachea and jugular vein Openings into these organs might prove troublesome or serious.

I should like, if any doctor tries this remedy, that he inform me of his success. I would also advise you to try Dr. Detmers' remedy.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

ABDOMINAL SURGERY IN THE SOLIPED IN ITS PRACTICAL APPLICATION.

By Wm. H. Gribble, D. V. S., Washington C. H., Ohio.

Many thanks for Drs. Merillat's articles on abdominal surgery, and will record two cases occurring in my own practice.

Case I.—A medium-sized eight-year-old mare suckling a four-months-old colt was grazing on the roadside, and a door-yard gate being open, of course the colt had to prospect while the mare took the short cut, jumping the picket fence. The pickets directly under the mare broke off, but one at the side cut an opening about seven inches long through the skin and abdominal muscles, followed immediately by a large intestinal hernia. The opening was some twelve inches posterior to the sternum and equal distance from the linea alba. A lady who saw the accident had sufficient thought to immediately take a bed sheet and with help fasten it about the mare. On my arrival we found the hernia so large and the protruding bowels so full of gas and congested from constriction of the wound, that we confess to some nervousness.

Giving the mare one ounce of chloral hydrate and secur-

ing plenty of help she was carefully thrown and securely confined; then after well washing the bowels with creolin solution and using the trocar there was not as much difficulty in returning them as we had anticipated. Muscle tissue was sewed with interrupted stitches of heavy catgut, then well sprinkled with iodoform sugar and the skin sutured with wire. The mare was assisted to her feet, an antiseptic plaster containing balsam and resin was applied over the wound, leaving a small opening, then covered with cotton and over all a well fitting body bandage, held in constant apposition with shoe elastic. Took animals under our immediate care. Colt was allowed to suckle three times a day; mare was confined to a box-stall and after the same evening of accident never missed a feed; wound was not dressed to exceed once in two days, and in sixteen days all bandages were removed, and to-day the only evidence of the accident (on the mare) is a slight longitudinal scar; while the evidence on me is an unpaid account.

Case II.—In order to get with its mother, a four-months-old colt attempted to jump a low, dull-pointed picket fence, and was found with front legs on one side of fence and hind legs on the other, with one picket up in the opening of prepuce or sheath. He was lifted off and ran to his dam, having apparently suffered no damage at all.

Next morning the *cul-de-sac* of sheath was obliterated, and in its place was a fluctuating tumor much larger than a man's head; while the colt still showed no pain nor inconvenience and still suckled. We were called. While we could not find a single mark of external injury, we found that the picket that went into the sheath had ruptured the abdominal muscles just anterior to the pubis and a little to the right, without even scratching the skin of prepuce.

The abdominal opening was four inches in length, out of which came the intestines, gravitating between abdominal muscles and loose skin, to point of sheath, forming the apparent tumor. A wagon-bed was called into duty for operating table; one end much higher than the other, and the colt carefully laid on it. We spent considerable time in our efforts to force the intestinal mass back from the point of sheath and through the abdominal opening, but failed. Having no chloroform, we now gave hydrate of chloral; securely tied the animal, and injected cocaine locally. The right hind leg was drawn well back and an incision large enough to admit the hand, was made through the skin, just over the abdominal opening and at side of penis.

Through this opening a pair of retractors held open the muscle wound and enabled us to quite easily draw the bowels back from point of sheath and pass them into the abdomen.

The wounds were carefully sutured, treated antiseptically and bandage applied. For three or four days there was loss of appetite and apparent colicy pains, but after that, except a slight soreness, shown by disinclination to walk, no symptoms of sickness were shown. The abdominal wound healed readily, with practically no pus, while the skin wound suppurated, sloughing out all the stitches, but now, three months after the accident, you could not tell the animal had ever been injured.

Case III.—Heavy bay mare, ten years old, was turned *Sunday* into a feed lot containing some cattle racks, made of 4x4 corner posts and boards. Next morning one of these racks was found broken and the mare had several places with the hair knocked off, but no actual wound. During the day a swelling developed at the lower part of right flank, gradually extending downwards and forwards. The owner was sick in bed at the time, so not much attention was given to the mare, although the hired man daily reported that the swelling was becoming larger and extending farther, but she was *feeding* well. *Friday* she ate her breakfast, but refused dinner, was constantly looking at the flank and lying down and getting up; and we were called. Found enormous swelling extending from breast to pubes, and most prominent at lower part of right flank. Examination showed swelling to be œdematous; so several punctures were made, from which serum flowed freely; but we were in doubt as to the cause of the extra enlargement at the flank, as that was œdematous as well as the rest; and external manipulation revealed nothing. On examination per rectum bowels could readily be traced out through a rent in the abdominal muscles, but no amount of traction would draw any back.

Animal was cast, securely confined, etc. An incision about eight inches long was made over the enlargement, downwards and forwards; infiltration of serum was fully two inches thick before we came upon the imprisoned bowel; a loop of small intestine not exceeding four or six inches in length and black as tar, held there by bands of fibrin. Animal was immediately shot. There was a rent through the small oblique about three inches long and through the large oblique about five inches long, through both of which passed the loop of intestines, and the X action of the fibres of these two muscles held the bowel, shut off blood supply and mortification had almost sepa-

rated the piece. Interest in this case is that the animal was injured *Sunday* and undoubtedly ate well until *Friday*, while during that time there could have been no passage of faeces through the hernia and that part was gradually undergoing mortification.

TETANUS TREATED BY SERUM AND HYPOSULPHITE OF SODA.

By SIDNEY D. MYERS, V. S., Wilmington, O.

On Dec. 26, 1900, my attention was called to one of the horses used to draw the engine in our fire department. The driver said the horse had been acting strangely for about four days, and on the day previous, while responding to an alarm, the horse had acted very badly. He is naturally very nervous, but on this occasion seemed more so than before, and was very hard to control. Upon examination I found a slight stiffness about the jaws. Any excitement would cause the membrana nictitans to cover about half of the eye; tail was elevated, abdomen tucked up and constipation was present. On the near hind coronet was a calk wound, which the driver stated had been inflicted about ten days previous, and was about healed. Diagnosis: tetanus.

I at once ordered the horse out of the team, and to be kept as quiet as possible and to be tied up so he could not lie down. I telegraphed Parke, Davis & Co. for sufficient antitetanic serum for one case. The next day, at noon (Dec. 27), I received six bulbs containing 10 cc. each.

At 12.20 I injected the first bulb. At 6.20 P. M. the condition was unchanged, and I injected a second bulb. At 10.10 P. M. injected the third bulb.

Dec. 28, 8 A. M., condition unchanged, except patient did not clean up his corn very readily. I injected the fourth bulb. At 1.30 P. M. he had eaten the morning feed of corn and cleaned up the noon feed of oats. Injected the fifth bulb. At 2.40 P. M. condition unchanged, when I injected the sixth bulb (66 cc., all told).

Dec. 29, 8 A. M., condition unchanged. Prescribed saturated solution hyposulphite of soda, six fluid drams in drinking water, three times daily.

The patient remained about the same, except that I would find him a little more nervous in the mornings than at night, until Jan. 3, or about 14 days from the time he was first noticed to be sick. From Jan. 3 he continued to improve until about Jan. 16, when all the symptoms had subsided.

TORSION OF THE UTERUS.

By J. A. McCRANK, D. V. S., Plattsburgh, N. Y.

I meet a few cases of torsion year after year among cattle, but none to date in a mare, and I sincerely hope I never will. I have no reason to be proud of my success in the treatment of those cases, so will continue no farther along that line.

On January 14th, 1901, I was called to see a cow whose period of gestation had expired and whose actions puzzled her owner. I found her lying on her right side chewing her quid, but every few minutes she would strain. On examination I found a "twist of the neck of the uterus," and with the greatest efforts I could use I could not get one finger into the uterus. There was a half turn. I worked very hard for a time in vain. I tried every method I could think of and I think I have read every one's treatment, but I was baffled at every turn. No doubt many readers of the REVIEW who have been in similar places can imagine they see me in my dilemma. I prayed that the days of miracles might return immediately, if not sooner, let me out of this muddle, save the cow, and my reputation. I was desperate; the cow must die. A thought occurred to me; I had seen cows spayed. I thought I understood the methods of entering the abdominal cavity, I took my knife and made an opening into the cavity over the neck of the uterus, passed my hand and arm into the cavity. With the pubis as a fulcrum and my arm as a lever I managed to reduce the twist completely. I then helped away the fœtus, removed the placenta, washed out the uterus with tepid water and creolin, stitched the lips of the vulva, put a strap about the body in advance of the udder to prevent straining, gave soft, easily digested food, had her kept warm and quiet. The cow recovered, is smart now, gives a good flow of milk, and to all appearances will live to have another calf.

Now, I do not report this case for the purpose of lauding my skill, for I really think it is a case of a miraculous recovery, after horrid bungling; and there is an old adage which may very well be applied to my case, "A fool for luck."

Now, while you may smile at this case and the results of my foolhardiness, I see no reason why the operation can not be performed on a healthy beast at the outset *if* other devices have proved a failure.

A SWALLOWED PLACENTA CAUSE OF DEATH.

By FRANCIS ABELÉ, V. S., Quincy, Mass.

Cow was badly distended with tympanites. Had had same a week before. Another veterinarian had left trocar in one and one-half hours, etc. Such was the history. At times she would vomit out great masses or sloppy food. I have seen similar symptoms, but never had chance to hold post-mortem. Read up and found that it was often due to tumor in the fourth stomach. Tympanites continued more or less for a month. Cow became emaciated, legs stocked up, appetite poor, back arched or rump appeared very sloping. Was allowed post-mortem.

Fourth stomach was all right, had some sand in it. In the contents of first stomach found a mass of placenta wedged into the œsophageal canal. Now, the strange part was that the cow had calved before this owner bought her. He had owned her over a month, having bought her at cattle market. The membrane was thin, clear and transparent in many places. Much of it was thready like frayed-out linen cord. The mass was bigger than two fists and enclosed fully twice its amount of ingesta worked into it. Had the real history been known I would have performed rumenotomy, but from symptoms never suspected the true nature of the trouble.

A VERY STRANGE CASE.

By JOHN MINCHIN, V. S., Goshen, N. Y.

On Feb. 7, I was called to see a very valuable horse at 5 P. M. Found patient in a very comatose state—in a profuse sweat, as if water was poured on him by the pailful; pulse hardly perceptible; extremities cold, and breathing very sensorously, with frequent regurgitations, being insensible to all surroundings; pupils much dilated, and excessive foaming at mouth. The horse was driven from home in the afternoon about five miles, well covered under shed for about one hour, when he started for home apparently all right. I was much puzzled on finding patient as described, for in all my practice I was never confronted with such a case. I concluded it was a case of poisoning, and administered some very powerful antidotes, and concluded I would have poor results. Tympanites was very bad, so I applied the trocar and canula with good results. In a short time he commenced as if trying to vomit and gurgle. Of course, I did not omit enemas, and to my great and agreeable surprise, in about four hours there seemed to be quite

a change. The coldness was fast disappearing, and the patient made frequent attempts to rise, which he did at 5 o'clock A. M., after eight hours suffering. He could not stand without some support, and to-day (Monday) he seems to be all right.

I need not say the cause of this trouble to me is very strange. I told the owner if the horse died not to touch him, as I wanted to examine him and try to find out the cause.

There have been a few cases of sudden deaths in Orange County recently, but not having seen any of them cannot give symptoms.

A NEW CORN-STALK DISEASE.

By E. A. RICHARDSON, V. S., Marcus, Iowa.

January 20, 1901, was called to the farm of Geo. Pimperton, five miles southeast of Marcus, to see a cow said to be suffering from fits.

History.—Cow running on corn-stalks, housed at night. Two weeks previous, when let out in the morning, fell forward on her knees; immediately arose, when for a few steps the front feet were carried quite high and wide apart, but after walking a few steps all signs of the trouble disappeared.

On morning of the 20th at milking time was found upon her knees in the stanchion. Owner thinking she was reaching for corn urged her up, when she upended and fell upon her side. Boy upon arrival stated she would show the whites of her eyes, lay awhile, then get up and go to eating or chewing her cud, apparently as well as ever.

Upon arrival I found the cow standing, chewing her cud, but when approached there were more or less nervous symptoms, with a wild or startled appearance of the eyes, excessive lachrymation, but none of the sclerotic coat showing. The muscular twitching was quite perceptible when I attempted to take radial pulse, which was 70; temperature not taken, having broken my thermometer the day previous. Bowels quite loose; muzzle not very dry, but became quite moist later; respirations natural, though somewhat hurried. While standing watching her she suddenly fell forward on her head, which was half turned under the body; hind legs still upright, turned head when she fell over on her side, attempted to get up, when the hind-quarters would be raised, to again topple forward and so twist the head and neck as to threaten strangulation. The same was repeated three times, the inferior oblique muscle of the eye contracting and drawing it toward the inner canthus,

showing a good portion of the sclerotic coat. Marked muscular twitchings; respirations quite hurried, though not regular, being interrupted by a peculiar suppressed grunt, abdominal raise, followed by that of thorax, when suppression would cause a decided bulging of the chest walls. This would be followed by natural breathing, though quickened and numbering 40 to the minute.

After recovering from an attack she would rise up upon her sternum and lie a few minutes before getting up. 25 minutes after attack (which lasted about 15 minutes), pulse 64, respirations 32.

When she would rise to her feet noticeable muscular twitching, muscles cramped, especially noticeable at stifle, causing a decided straightening of the hind legs, and would move with a short, hesitating stilty action.

When drenching at 12 A. M., 35 minutes from last attack, her head suddenly dropped, causing her to fall forward, but the attack was only mild, as hind-quarters were held down to prevent rising.

About 2 P. M. she was moved to a box-stall, but in coming out of stable, going down a decline of some two feet, she again fell forward, which I don't think would have occurred if head and neck had been supported.

Treatment.—Physic drench, as follows:

℞	Magn. sulph.,	lb i.
	Aloes Barb.,	℥ i.
	Zinzib. rad. pulv.,	℥ i.
	Ac. carb.,	ʒ i.

M. Sig. Dissolve in hot water and drench.

℞	Pot. brom.,	℥ viii.

Chart. viii. Sig. Two powders every two hours for two doses, followed by one every two hours.

Good recovery. Ordered kept off stalks.

Had my first call in November, treating four cases for one man, all recovered. They had a second attack when again put on stalks. I know of three other herds being attacked, but recovered without treatment, though symptoms in one were slightly different, travelling sideways with the hind-quarters similar to a dog. All cases were in mature animals, and in one case neighbors herding cattle in the same field, but only one herd was affected. All cases treated were milk cows.

They will apparently recover without treatment, only hearing of one death, which no doubt was due to strangulation, which could easily occur, as I have known cows to become cast

and thrash around so as to smash manger and stall into kindling wood.

The cause, no doubt, is due to a ptomaine poisoning from the corn affecting the nervous system, but why it affects the front quarters more than the hind I cannot say.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,

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SURGERY OF THE URETER.

Operations upon the ureters are of recent origin, most of them having sprung into existence during the last decade. At a meeting of the American Surgical Congress in 1894 a paper was read before the association by Dr. Christian Fenger, of Chicago, Illinois, which fully reviewed the surgical operations of this nature that were then on record; since then many experiments have been made to test the efficiency of such interference. At present we have not time to investigate the progress made in this line by foreign surgeons, who evidently would excel our efforts in the proportion to the relative efficiency of the profession in the continents respectively. In our résumé of the surgery of the ureters we shall be guided by the following outline:

(A) Indications for surgical interference.
  I. Surgical Wounds.
  II. Accidental Injuries.
  III. Neoplastic Growths.
  IV. Calculi.
(B) Surgical operations.
  I. Ureterotomy.
  II. Uretero-rectostomy.
  III. Uretero-Ureterostomy.

I. *Surgical Wounds.*—These wounds may be inflicted during operations in the region of the ureter. In nephrotomy the ureter may be accidentally injured and the wound thus inflicted may be intra- or extra-peritoneal, and longitudinal or transverse. The longitudinal intra-peritoneal incision can be sutured by Czerny or Lembert sutures, and, if necessary, it can be reinforced by taking a fold of peritoneum with the edge of the

wound. Extra-peritoneal wounds are not common, but may result from extra-peritoneal nephrotomy, or in the removal of ureteral calculi. In most cases they reunite without suturing; but should suturing be indicated, a few catgut stitches should be applied. Transverse incisions are more serious than the longitudinal, and in many cases must be approximated or invaginated by the Van Hook method (*Journal of American Medical Association*, March 4, 1893), which will be mentioned in the anastomosis of ureters.

II. *Accidental Wounds.*—The ureters are occasionally injured by gunshot, or punctured by sharp or probed by pointed objects, such as forks, knives or pointed sticks. These accidents, however, are more common in hunting dogs than in other domestic animals. Gunshot wounds are usually caused by a hunter's accidental or ill-directed shots; by brutal attendants; by forcible blows, falls or kicks, causing injuries in the lumbar region. Small animals may receive injuries of this nature by being run over by light vehicles. In human subjects, injuries to the ureters are often attributed to overstretching, but in domestic animals, no cases of this nature have ever been attributed to this cause. If overstretching is a cause for rupture of ureters in quadrupeds, the accident might follow high or long jumps made by these animals.

III. *Neoformations.*—New growths in or around the ureter which would obstruct the passage of urine from the kidney to the bladder are indications for ureteral surgery; but when of a malignant type and the renal portion is involved, it is useless to attempt to effect a cure by anastomosis; when such conditions are found, it is advisable to remove the kidney instead of confining our efforts to the ureter. When new growths in the surrounding structure compress the ureters or involve the ducts to such an extent as to interfere with their function, anastomosis or implantation of ureters may be indicated (*Journal of American Medical Association*, Feb. 16, 1901), but as already mentioned, the operator should be guided by the part of the ureters involved, in selecting the course to be taken.

IV. *Calculi.*—A calculus located in the ureter is sometimes an indication for ureterotomy or ureteral anastomosis. The calculi may be lodged in any part of the duct, but are most frequently located in the pelvis of the kidney; occasionally in the anterior and vesical portion of the ureter, but seldom in the middle portion. If a calculus can be located in the renal portion of ureter without surgical means it should be removed by

an extra-peritoneal operation. The most reliable method of locating calculi is by the use of the X-ray; other means are unreliable in domestic animals.

B. *Surgical Operations on the Ureter.*—In the brief consideration of this subject we shall only consider the following operations which we consider applicable to veterinary surgery:

I. Ureterotomy.

II. Implantation of ureter into rectum (uretero-rectostomy).

III. Uretero-Ureterostomy (anastomizing ureters).

I. *Ureterotomy.*—This operation consists of an incision made into the ureter; and the procedure may be executed either without entering into the peritoneal cavity, or by gaining access to the ureter through the peritoneal cavity; we shall therefore consider two methods of performing ureterotomy:

1. Extra-peritoneal ureterotomy.

2. Intra-peritoneal ureterotomy.

1. *Extra-peritoneal Ureterotomy.*—By this method of performing the operation, the ureter is reached through the abdominal parietes; a longitudinal incision is made on a line extending from the posterior costal border of the last rib to the anterior border of the ilium, near the end of the transverse processes of the lumbar vertebra. The extent and exact location of the incision depends upon the location of the obstruction. When the ureter is found and the obstruction detected a longitudinal incision is made in the duct and foreign matter removed and the wound thoroughly cleansed by irrigation. If the incision is small it is not necessary to suture it, but if it is long a few catgut sutures should be applied to keep the edges together. The Lembert sutural loosely ligated will answer. The wound is treated as all wounds requiring drainage. (*See* REVIEW, *Vol. XXIII, No.* 12, *Sur. Dept.*)

2. *Intra-peritoneal Ureterotomy* is performed by opening the abdominal cavity. This method is not recommended for herbivora or omnivora, but could be used in carnivorous animals without much inconvenience. The main trouble with this procedure is the inconvenience caused by the intestine; this, however, can be partly obviated by walling them off with sponges. When this is accomplished, the operation (*ureterotomy*) is completed by making a longitudinal incision in the ureter at the point selected; this incision must not be made larger than actually necessary to remove the obstruction (calculi generally). The incision is sutured by Lembert's suture, which can be reinforced by including a fold of peritoneum in a

secondary suture. The abdominal cavity must then be irrigated, sponges removed, and the cavity closed as in celiotomy.

II. *Uretero-rectostomy.*—Implantation of ureters into the rectum has been successfully performed experimentally, but its indications are not numerous, and its results are not very flattering; the operation is often followed by renal disease and uremia (*Journal of American Med. As.*, Feb. 16, 1901). The uremia being caused by the absorption of urine in the rectum. Renal disease results from the passage of bacteria to the kidney. When the bladder is not ruptured, and urethra is obstructed this interference is best replaced by making a *recto-vasical festula.* The operation (*uretero-rectostomy*) is performed by opening the abdominal cavity; the bladder if not ruptured must be emptied, and the ureters cut as near to the vesical extremity as possible, and this end implanted into the rectum by making an opening into it and suturing them so that the serous coat of the rectum will enclose the duct.

This operation is the most simple of the three above mentioned, and the recoveries from it are greater, but the indications are not numerous. Uremia and renal diseases are generally sequelæ of the operations.

III. *Uretero-ureterostomy.*—This operation is more uncertain than either ureterotomy or uretero-rectostomy, especially in very small patients. The operation has been successfuliy performed by some operators, but unfortunately, we have met with poor results from ureteral anastomosis, but would not discourage any surgeon if willing to resort to such surgical interference when indicated. This is an intra-peritoneal operation. The ureter to be connected with its fellow must be disconnected from the connective tissue which attaches it to the sublumbar muscles, and peritoneum; it is cut at the point selected; the vesical portion is ligated and renal portion cut obliquely is partly invaginated into an incision made into the other ureter and carefully sutured so that the lumen of the duct is not obstructed. The procedure following the anastomisis is the same as in other secondary abdominal operations.

HERNIA.

The word "hernia" refers to the protrusion of the contents of a cavity through its parieties. In veterinary surgery it has lost its general meaning and is used almost exclusively as a synonym for "abdominal hernia," because the physical constitution of the abdominal cavity and contents of domestic mam-

mals is favorable to the formation of such abnormalities, while the other cavities seldom suffer.

Classification of abdominal herniæ :

A. *As to location :*
1. Scrotal or oscheocele.
2. Inguinal or bubonocele.
3. Umbilical, exomphalos, exomphalocele.
4. Ventral.
5. Phrenic or diaphragmatic.
6. Vaginal.
7. Cruro-femoral.

B. *As to condition :*
1. Reducible.
2. Irreducible.
3. Strangulated.
4. Purulent or pyocele.
5. Serous or hydrocele.

C. *As to contents :*
1. Intestinal or enterocele.
2. Omental or epiplocele.
3. Vesical or cystocele.
4. Gastric or gastrocele.
5. Hepatic or hepatocele.
6. Splenic or splenocele.
7. Uterine or hysterocele.

D. *As to cause :*
1. Traumatic.
2. Congenital.

The important hernias in domestic animal surgery are :
1. Congenital bubonocele and escheocele.
2. Congenital exomphalos.
3. Traumatic ventral hernia.
4. Strangulated hernia.

Congenital Bubonocele and Escheocele.—Protruding loops of intestines or omenta into the inguinal canal and scrotum is a very common congenital abnormality of all domestic quadrupeds. They are especially frequent in the new born of all genera, but show a striking inclination to reduce spontaneously as the animal grows older. As an animal develops toward maturity there is a decided tendency to close up the natural fœtal orifices, while at the same time the suspensory apparatus of the viscus (the mesentery and omenta) become relatively shorter. Here and there, however, the tumor persists through life and

may even grow, through the influence of gravity or injury, to immense proportions. In mature working animals they may accidentally become strangulated, purulent or serous, and their natural tendency is to become more irreducible by partial constriction of the orifice.

Their seriousness must never be underestimated. In an inspection for soundness they warrant prompt condemnation, even in the youngest animal, as they jeopardize the animal's life by complicating the operation of castration, if not by the chances of growing or becoming purulent or strangulated.

Diagnosis.—Inguinal hernias may exist for years and entirely escape notice. Their presence may be observed for the first time when they become strangulated and threaten the animal's life, or at the time of castration, when to the surprise of the gelder, the intestines protrude as the patient regains his feet. Epiplocele (omental hernia) is very common, and it is indeed seldom that they are observed until an hour or two after castration, when a foot or two of omentum may protrude through the scrotal incision. The careful castrator palpates the inguinal region before proceeding with his castrations, and then shapes the steps of his operation accordingly, if any suspicious tumefaction is evident. As regards the diagnosis of bubonocele, it is safe to state that all non-painful fluctuating tumefactions in the inguinal canal are hernias.

Scrotal hernias must, however, be differentiated from various other pathological conditions. Hydrocele, sarcocele and varicocele, or a combination of these are by no means easy to recognize from enterocele. If the hernia is reducible it is readily recognized from other tumefactions by the readiness with which it disappears and returns on manipulation, but when irreducible or partially so palpation is less convincing—in fact, it is confusing. The non-painful fluctuating tumors are either hernias or hydrocele. The latter presents the characteristic fluctuation of fluid, and cannot be made to disappear unless they co-exist with reducible hernia. Then the diagnosis is again difficult. Varicocele and sarcocele are recognized by their firmness, and by being irreducible. A rectal exploration with one hand simultaneously with external palpation with the other frequently serves the useful purpose. The late Prof. Williams based his diagnosis on the expansion of the tumor when the animal coughs. To take full advantage of this effort the tumor is held gently in one hand, while a second person "coughs" the animal. With each cough the tumor will expand, if it is a

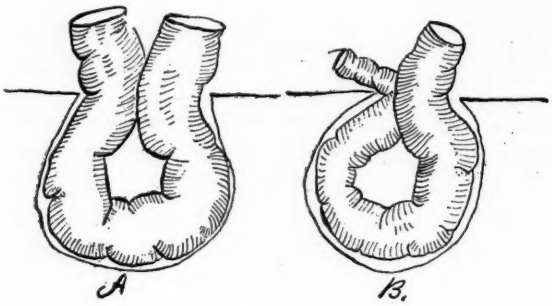


FIG. 40.
A, non strangulated hernia ; B, strangulated hernia.

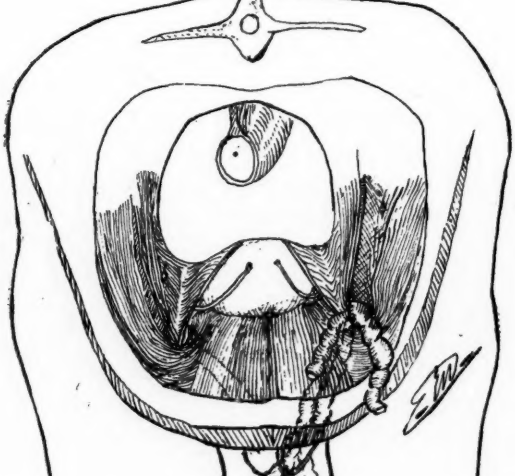


FIG. 41.
POST-MORTEM APPEARANCE OF A YOUNG STALLION THAT DIED FROM INGUINAL HERNIA (*Diagramatical*).

hernia, while only as light upward movement is observed if the tumefaction is confined to the testicle. The judicious application of this method, together with the rectal exploration, offers the only possibilities in the diagnosis of obscure scrotal tumors.

Painful tumefactions of the scrotum demand even more careful scrutiny. Until their true character is revealed they must be regarded with the greatest and gravest suspicion. A suspected orchitis or funiculitis may prove subsequently to be the incipient stage of a strangulation. The pyrexia, celialgia, local hyperesthesia and anorexia observed in strangulated hernia are seen also in orchitis and therefore do not serve the purpose of differentiation in the incipient stage, and as the life of the patient will depend upon an early diagnosis, procrastination is a dangerous element. Even when œdema and pain do not prevent satisfactory external palpation, the rectal exploration will again materially assist in reaching a logical conclusion. Again, the colicky pain of hernia must be recognized from the manifestation of distress produced by a painful orchitis.

If the above constitute the best methods of diagnosing scrotal hernia at our command, we are still without a universally satisfactory means of arriving at an accurate diagnosis. There are irreducible scrotal hernia that cannot be diagnosed until an incision is made into the scrotum. The orifice may be too small to recognize per rectum, and as external palpation will not reduce them, even the experienced may fail to differentiate readily.

Treatment.—The scrotal or inguinal hernia of working geldings that is nominal in size, might well be left alone for strategical reasons, but where they show an inclination to grow larger and larger, or are the source of frequent colics, operative treatment may then be recommended. Williams referred to an escheocele extending to the hocks, that gave the animal only nominal inconvenience. Laxative diet, regular though only moderate work, are essential precautionary measures. In domestic animals further palliative treatment is ineffectual. The truss of the human surgeon cannot be adjusted to the inguinal canal of the quadruped.

In the breeding stallion (a bad horse to recommend) the diet must be carefully attended to and all violent exercise avoided. There is no satisfactory method of reducing the hernia and at the same time preserve the testicle, and even when it is decided to sacrifice the testicle the very best the veterinary surgeon can do in 90 per cent. of the cases is to transform a scrotal hernia

into an inguinal one. While this may be satisfactory to the client it certainly does not meet the highest expectations of a scrupulous surgeon. We shall state without fear of contradiction that the only curable scrotal or inguinal hernia in the adult horse is the irreducible one, in which the orifice is small and in which it was found necessary to enlarge the constriction to replace the bowel. In these the inflammation incident to the incision may occlude the orifice, but in all cases where the orifice is large (the majority) the operations described by the best surgeons are not radical by any means. Our operations for scrotal hernia are palliative, not radical. We only pinch up the sac and support the hernia, that is, we lift it higher into the canal. In the large animals we must be satisfied with these methods, because there is too much danger attending the more complicated (radical) operations. To expose the whole inguinal canal and suture the orifice gives us too great a mortality in spite of attempted asepsis. The radical operations may be carried out profitably in the colt and calf, but never in the horse and ox. In the hog and dog the palliative operations are favored by gravitation and are hence quite successful. In the young animal the simple operations (pinching process) palliate the condition, while growth and development accomplish a permanent cure, but in old subjects scrotal hernias are entirely refractory to such treatment.

It is frequently said that recent scrotal hernia can be permanently reduced by manipulation. In contradiction to this statement we will first doubt the very existence of a *recent scrotal hernia.* Recent scrotal hernias are no more nor no less than old inguinal hernias that have recently descended into the scrotum, and they never can be permanently reduced and retained except by operation, and then the best we can do is to support them higher in the canal or else jeopardize the patient's life with a radical operation. We are probably not justified in adopting the radical herniotomy of the human surgeon, because of the relative danger of sepsis, the weight of the viscus on our surgical wound and the impossibility to induce absolute quiet during the healing.

Palliative Operations in the Horse.—Although a veritable nightmare to the modern surgeon, the most effectual as well as the safest operation is the traditional "*Covered Operation.*" It has the advantage of accomplishing as much as the other methods without exposing the textures to external influences. It is a safeguard against sepsis. The *modus operandi* consists simply

of placing the animal in the dorsal recumbent position, reducing the hernia by gravity and manipulation, and then pinching the sac (skin and all, including the testicle in the entire horse) with a strong clamp, which is allowed to remain intact until it sloughs off. Whenever the hernia is not reducible the sac is exposed and a long, curved, probe-pointed bistoury is guided to the orifice and a forward incision made to enlarge the constricted opening. If the hernia still persists the bowel is well oiled to facilitate reduction, or even punctured with a small trocar and canula to reduce the volume. Then the whole scrotum is pinched up as in the reducible one.

Another method—*the uncovered operation*—consists of exposing the testicle without cutting the tunica vaginalis, ligating the cord with a strong cord and then removing the testicle with a scalpel. An improvement on this method consists of ligating the cord by passing a needle armed with a double suture through its centre and then tying each half separately. In either case the scrotal incision is left open. In pigs the covered operation is preferable on account of their dirty habits. The castration of a ruptured pig is rendered safe by simply removing the testicle in the usual manner, suturing the scrotal incision and then protecting the wound with au adhesive substance. If such an animal should be submitted for operative treatment subsequently (that is a pig that had been castrated), the uncovered operation must be substituted, because the hernia may at this time be irreducible from adhesions of the intestines to the sac. Incisions into the scrotum of castrated pig must be made cautiously for fear of wounding the intestinal loop. A still better course is to operate on such pigs only at the urgent request of a client or not at all. Vanlaw, a gelder of forty years' experience, operates upon ruptured boars as follows: The testicle is carefully exposed with the tunica vaginalis intact. It is pulled outward with the one hand while the other is engaged in breaking down the outer adhesions of the tunic so as to expose as much of this membrane as possible. A needle threaded with strong braided silk is then passed through a small portion of the tunic near its insertion so that it can not slip away subsequently when the testicle is removed, and to prevent the ligature from slipping off after the operation is complete. The testicle is now exposed and removed by traction, and the cord tied around the tunic tight enough to produce gradual strangulation. In this way the spermatic cord is not held by the ligature but passes into the abdomen with the intestinal loop. The

same method is applied to scrotal hernia of the horse and ox.

Congenital Umbilical Hernia.—The word "exomphalos," used by veterinarians to designate hernia at the umbilicus, is a misnomer. It was originally intended to designate a protruding navel, but usage has given it a wider meaning.

Exomphalos is essentially a disease of young animals, appearing during the first six months after birth and like scrotal hernia reduces spontaneously as the patient grows old. They are probably never traumatic, but r 't from a persisting navel orifice, in all instances. Th not inclined to grow to any great size, nor do they frequently become strangulated, yet it is our opinion, in spite of their tendency to reduce spontaneously, that umbilical hernia should never be left to recover without extraneous impulse. We have observed in a number of instances that umbilical hernias of young animals that are not promptly reduced are prone to result in adhesions of the bowels to the wall of the sac. These adhesions may cause recurrent colics and even perforation of the viscus. The mysterious perforations of the colon or ilium observed in post-mortems are generally traceable to umbilical adhesions which rent the bowel when the animal rolls about. Our attention was first attracted to this condition two years ago while holding an autopsy on a six-year old horse that died from shock one hour following a minor operation in the recumbent position.

The history of this animal brought out the interesting facts that he had had an exomphalos as a colt and since growing to maturity had frequently suffered from mysterious colics. He entered the operating room in the best of health, withstood the pain of the operation without struggling, but upon regaining his feet showed the typical symptoms of surgical shock, *i. e.*, rigors, profuse perspiration, especially about the head and neck, labored respiration, coldness of the surface, paleness of the visible mucosæ and sinking pulse. He died one hour after the operation. The autopsy revealed a large perforation of the colon, the semi-liquid contents of which were disseminated throughout the abdominal cavity. A close inspection revealed the true character and cause of the perforation: an old adhesion of the colon to the umbilicus. It is evident that the perforation occurred as the animal was rolled over to untie the securing ropes. Similar perforations of the ilium were observed in two other autopsies on animals that died mysteriously from slight attacks of colic. Hollingsworth, in a paper read before the Illinois Veterinary Medical Association in 1898, referred to two cases of

mysterious perforations of the ilium occurring in his practice. Exactly how many deaths from colic might be traced to this condition will of course only be known after further investigation.

These cases lead us to advise veterinarians to take the firm stand that all *umbilical hernias in colts and calves demand prompt surgical attention* and should not be permitted to reduce spontaneously.

Operative Treatment.—In reviewing the many different operations advised by European and American practitioners we have adopted a method used with universal success by our old friend and colleague, Dr. W. F. Derr, of Wooster, Ohio, who to our personal knowledge has had more than an average experience in this connection, in one of the richest breeding and farming districts in America. Derr's method of operating is as follows:

Equipment.—Curved scissors, a strong piece of cord, two steel skewers 3 to 5 inches long, and antiseptics to sterilize the area.

Modus Operandi.—In the standing position four marks are made in the hair, equal distance from each other, around the base of the tumor. This is done with the scissors in order to mark the exact points to insert the skewers. The marks may be made with chalk or any other handy method. It is absolutely necessary to do this in the standing position because the skin covering the tumor will change its position when the colt is cast for the other steps of the operation. To cast an animal, and then pinch up the skin that covers the tumefaction while in the recumbent is a grave error in these operations, because when the animal rises it will be found that the strangulated area has moved to one side of the umbilicus. On the other hand, if marks are made in the standing position and the operation is performed over them while the animal is cast, the part will find its place directly over the orifice when the standing position is again assumed.

When the seat of operation is thus marked the patient is secured in the dorsal recumbent position. The tumor and environs are well washed with a potent antiseptic and the skewers are inserted subcutaneously from mark to mark so as to cross each other in the centre. The hernia having been safely returned to the cavity the cord is now passed around and beneath the protruding ends of the skewers and tied tightly enough to produce strangulation. Whenever the hernial orifice is large,

and especially if the abdominal walls are thin, the cord is not tied tight enough to produce complete strangulation, but a second one is applied four days later to complete the strangulation and prolong the inflammation. If the inflammatory process still seems insufficient it is augmented by subcutaneous injection of sterilized brine at different points around the base of the tumor. In fifteen to twenty days the tumor will slough off, leaving a small wound that will require no further attention. It is needless to add that the region, the skewers and cord must be surgically clean. Derr reports two cases of tetanus from this method, but these occurred before the etiology of this disease was known.

The exomphalos submitted for treatment shortly after birth may frequently be permanently reduced by compression with a body bandage. Alverson, of Bloomingtom, Illinois, reports the best of success from this simple method. Other practitioners vouch for the efficacy of actual cautery or cauterization with strong mineral acids over the tumor and its immediate surroundings. McKillip pinches the tumor in a wooden clamp and then further strangulates by tying a cord tightly around it, after the clamp is adjusted. English practitioners favor a steel clamp made to fit the curvative of the region and held in place by supporting it around the body. Möller prefers sectional (multiple) ligation.

Any of these sensible methods are worthy of consideration in view of their safety. The radical operation deserves no place in veterinary surgery, on account of the inevitable fatalities, except in the cases which prove refractory to the palliative operations; and these are indeed rare. Derr reports no failures from the method above mentioned after a trial of upward of 30 years.

(*To be continued.*)

SURGICAL ITEMS.

Wyman recommends neurectomy as a *dernier ressort* for the lameness of corns in the feet of horses. In our opinion this is a dangerous recommendation. The lameness of corns that proves refractory to the ordinary palliative treatment—while very rare—is too serious a condition for neurectomy of the plantars or digitals. Neurectomy is a useful operation in proportion to the surgeon's ability to select suitable cases, and while the indications in equine surgery are legion, it is our opinion that corns is not one of them.—(*L. A. M.*)

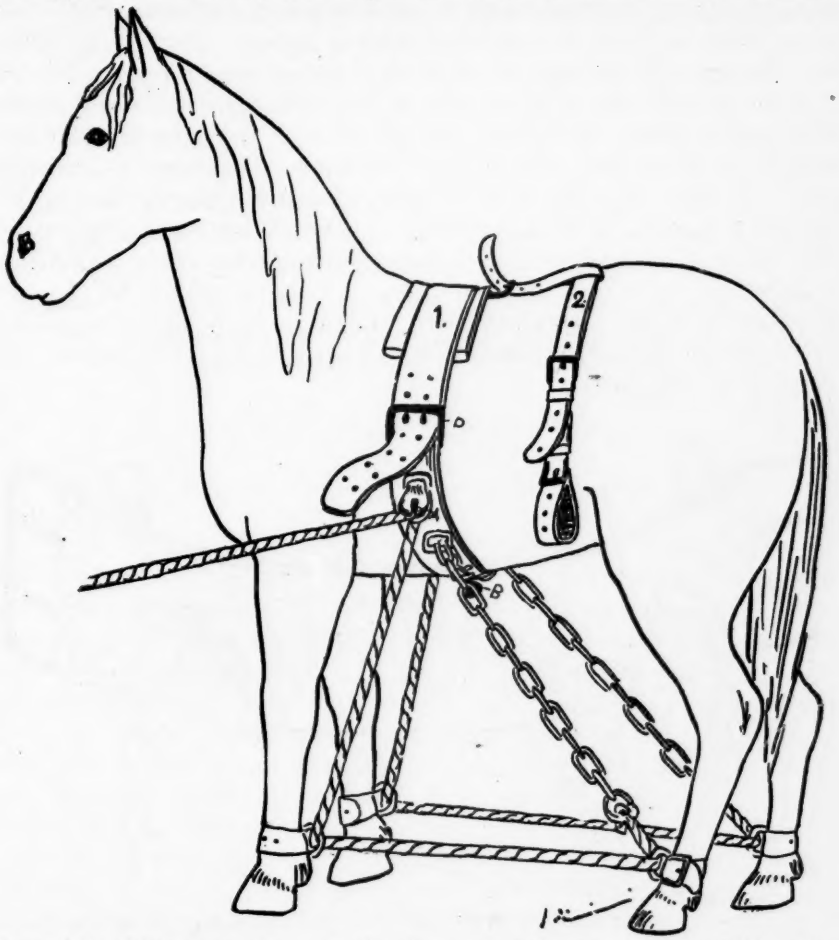
In the February number of the REVIEW, under "French

Review," we notice the report of a case that has attracted the attention of a number of English and French journals. The case was reported by Monsarrat, and consisted of an atrophy of the semimembranosis following the castration of a horse without properly securing the patient. This instance verifies the statement frequently reiterated in this department that no operation should ever be undertaken before the patient is perfectly secured. At the last meeting of the Chicago Veterinary Society, Professors Hughes and McKillip furnished the society with interesting data anent the restraint of surgical patients. Hughes, during 17 years with an operating table, reported no accidents, while McKillip, with 25 years' experience with ropes and harness, recorded but one trivial accident. Both of these surgeons are careful men, and are each favored with ample appointments and educated help, which account for their universal success in protecting their patients against injury. The same items, we believe, contribute largely to their success as surgeons. The other members of the society, who are less favored with help and appointments, report occasional accidents, among which are fracture of the vertebræ, fractures of the femur, radial paralysis, brachial paralysis, and azoturia. To attempt even the minor operations with the patient free to move in every direction is dangerous to the patient and surgeon and makes accurate surgery impossible, and to permit a patient "to make a monkey of you" is as homely as the expression.—(*E. M.*)

In order to supply our readers with as rational matter as possible we frequently solicit articles from veterinarians whom we deem specially qualified along particular lines, and as the articles thus obtained are published *verbatim* we cannot be responsible for their contents. Nevertheless, we invite, encourage, yes, admire, criticism that may enlighten our readers; that may add a mite to the storehouse of veterinary surgical knowledge; or that voices honest opiniors, right or wrong. We admire the critic who fortifies his position with logical or well-meant arguments as a real scientist, or at least as a true friend to science. We have little time and less inclination, however, to give more than passing notice to the critic who simply denies the assertions of others without some substantiating propositions. Such a critic does harm in proportion to the number of readers who are weak enough to accept his deductions unchallenged. To-day it is fortunate these are few and far between. And when such a critic uses unwarranted, cutting insinuations he lacks the elements of common courtesy, but from a scienti-

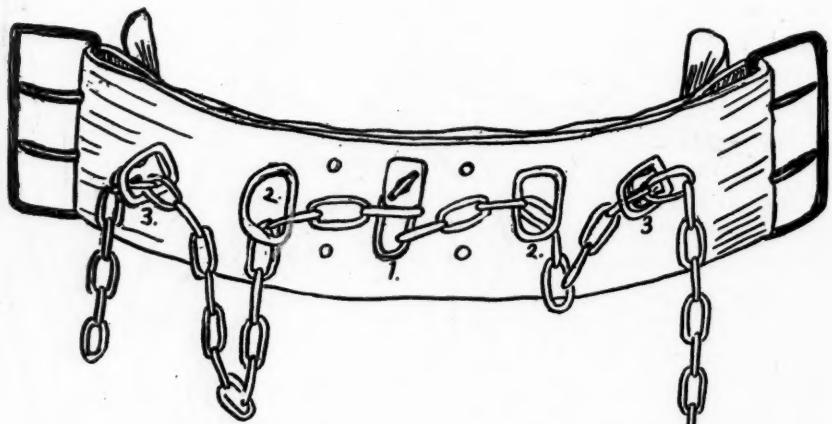
fic standpoint he is probably harmless. Then, again, the critic of American veterinary literature who limits his criticisms to the rhetorical aspects of the articles appearing in our professional journals lacks a keen perception of the educational status of our rank and file. During the past decade the low matriculate and graduate requirements of most of our colleges have recruited our ranks with few college men, few high school graduates, but it has given us many who have only the rudiments of grammar school work. To these latter men we must look for a large share of our current literature, and, while their writings may not glow with fine rhetoric, they usually contain either sound sense or honest effort. The next generation of veterinarians may reasonably expect nicer literature, because the recruits may then emanate from the high schools and universities instead of from the "little red school-house," as they do to-day. Our literature to-day suffers much from the fact that those who write nicely have little technical qualification, while those who are well qualified by experience cannot, or have no time to write. We have in mind a recent letter to the REVIEW, written by Mr. Butler, for the ostensible purpose of stimulating a lively interest in the clinics of the American Veterinary Medical Association, in which he ridicules a writer in this department who dared to criticise the conditions under which a certain operation was performed at the Omaha clinic in 1898. Whether this clinic merited the drastic criticism it received has no bearing upon the case so far as we are concerned. It may have been an ideal operation, conditions and all. The point we wish to make is that the writer deserved better treatment from Mr. Butler. To openly ridicule a writer's effort to describe the technique of an operation seems to us a mighty humble occupation for the president of the A. V. M. A. Those of us who are not specially blessed with a high education frequently find it difficult to vividly portray the minute details of medical and surgical technique, without overstepping the bounds of good English. In order to "bring out" our points many of us are prone to diverge from the sphere of classical English and use "convenient" words and expressions instead. Even Mr. Butler finds it convenient to say, "Asepsis is not the 'whole thing' in surgery," etc. Although our literature is evidence of our merit as a whole, and, although we should make every effort to improve our rhetoric, there is reason at this stage of veterinary evolution to be charitable to our writers. —(*L. A. M. and E. M.*)

The Cowie Casting Harness.—At the Ithaca meeting of the New York State Veterinary Medical Society, Dr. Charles Cowie, of Ogdensburg, N. Y., demonstrated the casting of horses with a harness which he had employed in his practice for many years. Those present were greatly impressed with the simplicity and safety of the device, and inquiries were directed at the Doctor



from all sides as to how and where duplicate sets could be obtained, to all of which he responded that he had never seen a similar set in this country, he had brought the harness which he now used with him when he came to America. He spread them out upon the lawn and gave his consent that all who cared to do so could take measurements and have them made. As there were many special buckles and other attachments requiring

considerable trouble to obtain, and necessitating much supervision in manufacturing, many desisted. Dr. A. H. Ide, of Utica, N. Y., was determined, however, to have a duplicate of them, and began measuring and drawing diagrams. The writer taking advantage of the situation, importuned the Doctor to have two sets made and send one to him, to which he kindly consented; and others at once made similar requests, until the Doctor had agreed to furnish about a dozen. During the process of manufacturing the first set, he saw many opportunities for improvements in the way of a self-locking device and other modern methods, and when he finally had it ready to ship the principle was about the only resemblance between it and the original one. The REVIEW commented upon the harness in its October issue, and it has received several letters asking a description of it; particularly from readers in the West, and as an answer to their inquiries mainly, we have asked Dr. Ide to furnish us with a drawing of the harness in position, together with a description in detail of the apparatus, and herewith we present the same.



The first drawing shows the "Cowie Casting Harness" improved. The automatic lock device as shown by A in above drawing, allows the hobble-chain to pass only one way, while pulling is performed. It is, therefore, self-locking, dispensing with key, or snap. B shows screw device in centre of band or girth, which holds ends of chain. When it is desirous to release the horse, all that is required is to run the screw back and the horse is freed from all fetters. 2 shows strap to be applied after horse

is down, which is buckled around each hind leg just above ankle joint, which holds hind legs in flexed position and secure. D shows English wrought iron, double-tongue roller buckles. This device is unexcelled for safely securing a horse for any operation. Two men can lay (not throw) a horse down within the area of a blanket.

No rope to wear out, as wear comes on chain; no ropes to *tie*. Weight of rig complete, 20 lbs.

The second drawing shows chain and lock device. Chain runs from 1 to 2, from 2 to hind hobble, from hind hobble to front hobble, thence to 3. The lock device allows the passage of chain but one way (outward). When ready to let horse up all is done by running screw back, which is completed by chain passing from 1 to 2, from 2 through hobbles, which are made on the English style, thereby allowing hobble to drop to floor.

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D.V.S., New York City.

RESEARCHES ON THE HISTOLOGY OF TUBERCLES, AND THE CURATIVE ACTION OF TUBERCULIN [*A. Broden*].—These investigations extend to the histological development of the tubercles, and the combatting of the organism against the bacilli, in animals which were treated with tuberculin. A great number of such prominent histologists as Baumgarten, Zeigler, Klebs, and others, conclude that the formation of tubercles arises from the connective tissue, while Hiss, Metschnikoff, and others, see their development from lymphatic cells. The author found as very suitable tissue for the investigations the mesentery of guinea-pigs, dogs and goats. Strong cultures of the tubercle bacilli, which originated in man, were injected intraperitoneally in dogs. In these animals the first thing noticed was an exudate, with exclusive leucocytes, having polymorphous nuclei, and with a lively amœboid movement. Depending on the concentration of the inoculated cultures, free bacilli cannot be found between the second and fourth day. The great majority of them are inclosed by the leucocytes, while the smaller part are in the immobile elements. After a few days the leucocytes inclosing the bacilli disappear,

and one found bacilli only in the immobile elements. The endothelial cells, which unite with the cells of the deeper layers, quickly absorb the tubercle bacilli, swell up and divide, resulting in the new formation which forms the tubercle. The new formation is infiltrated and covered with polymorphous leucocytes, but which are not contributing to the formation of the tubercular tissue. In regard to the curative action of tuberculin, B. points to the fact that the tubercles in the dogs treated with tuberculin were much more developed than in the control animals. Therefore, the increased tuberculous new formation in those can be considered as a favorable reaction of the system. The tuberculin increases the strength of the system, thereby enabling it to defend itself against the tubercle bacilli.—(*Arch. de Med. Vet. Experim.*)

A Practical Iodide of Potassium Infusion Apparatus.—The apparatus which was constructed by Veterinarian Stampfl, from Wilhelmsburg (Austria), consists of a wide-neck bottle, with a capacity of about 1000 ccm. (2½ pints), which is closed by a double perforated rubber cork. In one of these perforations is placed a short and in the other a long glass pipe, which reaches almost to the bottom of the bottle. The short glass pipe is connected with a rubber tube, about an inch long, to which an infusion catheter is applied. The rubber tube is closed by a spring stopper. For use the apparatus is filled with a solution of 10 grm. (150 grs.) of iodide of potassium in about 800 grm. (2 pints) of water, and after closing with the cork it is turned over with the neck to the ground. After the opening of the spring-stopper the air enters the bottle, through the long pipe, and the solution will flow out through the catheter, by which it can be infused into the teats. To be able to divide the solution uniformly for the quarters of the mammæ, the bottle may be graduated so that the quantity infused can be read off in an easy manner. Other superiorities of this apparatus are that the sterile solution will not become infected when the long glass pipe is closed with a piece of cotton. An infection of the mammæ in this manner is almost impossible. This apparatus is so simple in construction that any one is capable of making one for himself.—(*Thierärztl. Centralblatt.*)

Cooling Ointments.—Unna recommends cooling ointments of the following composition: (1) Zinci oxydati, 15.0; sulfuris, 15.0; terr. silic, 10.0. M. ft. purge. (2) Magnes. carbon., 2.5; aqua destill., 5.0; M. adde vaseline, 5.0. (3) Adipis lanæ, 20.0; ol. rap., 10.0; aqua destill., 30.0. (4) Ugt. lement, 10.0;

amyli, 5.0. (5) Pasta zinci mollis in three strengths : Ol. lini, 20.0, 25.0, 20.0; aqua calcis, 20.0, 25.0, 20.0; zinci oxydati, 30.0, 15.0, 40.0; cretæ prep., 30.0, 25.0, 20.0. To relieve pain, add to the pasta zinci mollis, opium, extr. cannabis, cocaine; for itching, ol. cadin, menthol, thymol. May be applied successfully in moist eczemas, burning in second grade, and in all cases of artificial dermatitis.—(*Mthft. f. prk. Dermatolz.*)

EXPERIMENTAL RABIES (LYSSA) IN BIRDS [*Kraus and Clairmont*].—The authors proved in experimental studies, that rabies may be produced in chickens, geese, ducks, and young pigeons, by both the fixed and the street virus. The time of incubation varies from 14 to 40 days. The form of the disease in birds is the paralytic form of rabies, of which the duration is astonishingly long, and may last several weeks; it begins with ataxia, followed by paresis, paralysis of the extremities, of the larynx and pharynx. The majority of the animals die from lack of nutrition, showing well marked emaciation. In rare cases recovery took place. The disease may be transmitted from birds to rabbits. Old pigeons are made predisposed to the lyssa infection by starvation. The birds that died from rabies showed changes in the central nervous system, which are similar to those that are found in other animals and man, but not as well marked. [See October REVIEW, page 507.]—(*Wiener Med. Wochenschr.*)

TREATMENT OF PARTURIENT PARESIS WITH CARBOLIC ACID [*Pierom*].—P. received a cow for treatment, which after parturition suddenly began to stagger and finally dropped. She showed the well-known symptoms of milk fever, having a temperature of 39.2° C. He ordered dry friction and lukewarm enemas. Internally, 500 grm. sulphate of sodium and 20 grm. ipecacuanha in a litre of linseed oil was administered. Beside this the cow received subcutaneously 1.5 grm. carbolic acid in 15 grm. glycerine. Two hours after this the cow revived from the lethargy and got up and soon began picking up hay. P. claims that this favorable termination is to be credited to the carbolic acid (?).—(*Giorn. d. R. Soc. Acad. Vet.*)

RUPTURE OF THE PERICARDIUM AND OF THE LEFT VENTRICLE [*Brunet*].—A horse, after feeding, was hitched to a manure wagon, and died suddenly while under way. It was known that the driver struck the horse several times with the manure fork. On autopsy the organs of the abdominal cavity did not show anything particular. The diaphragm on the right side was torn in two places with irregular bloody edges. The

upper rupture was 5, while the lower was 25 cm. long. The thoracic cavity did not contain any free blood; the lungs were filled with blood to their highest capacity. The apex of the heart passed out through a slit of the pericardium. The slit was on the anterior surface of the heart, and extended on its whole height. The edges were slightly reddened; the serosa was normal; the pericardium did not contain any blood. Corresponding with this slit the wall of the left ventricle was ruptured in two places, but did not extend through the whole thickness of the heart muscle. Their length was 4-5 cm. They began at the height of the auriculo ventricular groove, extending downwards, toward the apex of the heart. The muscles of the heart were somewhat of a diffused color, the ventricular wall appeared to be thickened, and the endocardium and valves were intact. The anterior sharp edges of the ribs, especially the one of the 4th rib, extended into the thoracic cavity. Just at the height of the anterior sharp edge of the 4th rib were the slits in the pericardium and heart muscle. B. thinks that the ruptures in the diaphragm were due to extreme strain in pulling. In explanation of the ruptures of the heart muscle he says that the somewhat hypertrophied and degenerated heart labored very hard during the exertion, by which it reached the thoracic wall, and as to being struck with the fork, the anterior edges of the ribs were directed into the thoracic cavity, and during a state of systole of the heart this was cut on the sharp edge of the rib. B. observed a similar case in which the ribs were intact after a collision with a shaft. The heart in this case was totally ruptured.—(*Rec. de Med. Vet.*)

FRENCH REVIEW.

PARALYSIS OF THE RADIAL NERVE FOLLOWING SUPPURATIVE ADENITIS OF THE AXILLARY LYMPHATIC GLANDS IN A DOG [*By J. B. Scoffié and E. Seres*].—This dog was six years old, and had been treated for some time on account of lameness of the left fore leg. He had had an intermetacarpal fistula of the paw of that leg due to some foreign body, of which he had recovered. His condition at the time he was brought to the authors was such that treatment was not advisable. He was very lame on walking, running on three legs, the antibrachial muscles being atrophied, the olecranon muscles very much so, and remaining insensible to an interrupted electric current. The diagnosis of the paralysis of the radial nerve was made,

but its origin remained so far unknown, until the post-mortem was made. Then it was found that the olecranon muscles were atrophied, their group being reduced to the condition of a thin flabby band of straw-yellow color. The extensors of the carpus and of the claws were atrophied and pale. On removing the leg from the trunk a mass formed by the hypertrophied axillary lymphatic glands was exposed, forming three distinct lumps, two of which were fluctuating and contained pus. The radial nerve was whitish, and before passing through the suppuration of one of the glands it formed a thick cord which had its origin at the 8th cervical pair. Examination by the microscope revealed lesions of the nerve itself, lesions of its roots and of the spinal cord. The whole history of the case can be reconstructed : the dog wounded its paw with a foreign body, the formation of a purulent centre took place, from it pyogenous germs reached the axillary glands, the adenitis formed, the nerve is involved and undergoes degeneration, hence that of the muscles under its influence.—(*Revue Veterin.*)

CONTINUATION OF VICIOUSNESS AND PERSISTENCY OF GENESIAL INSTINCTS BY INCOMPLETE CASTRATION IN THE HORSE [*By J. Bournay*].—In a previous article the author called the attention of practitioners to these defects by recording a case in which a horse that had been castrated had manifested them, and where he had shown that by extirpation of the spermatic cords, a second castration, excellent results could be obtained. This second case confirms his view. A handsome horse recently bought was brought to him for examination. He looked well, was a beautiful animal, but seemed nervous, restless and neighed frequently ; he had no erection. His testicular region showed two infundibuliform cicatrices. Five days later, the disposition had changed, he was ugly, kicked, bit and was dangerous to approach. He was thrown for examination. On palpation the inferior extremity of the cord was found swollen as big as a nut and the cord itself felt enlarged, a condition which was detected readily, by rectal exploration, at the superior inguinal ring. In other words, there was abnormal swelling at the extremity of the cord and insufficient atrophy in its entire course. The animal was operated upon by resection of the cords, and since has worked regularly. Microscopic examination of the end of the cord did not reveal the slightest indication of testicular torture, which might have served to explain the character of the animal before the resection of the cord.—(*Revue Veterin.*)

LACERATION OF THE PERINEUM, PERMANENT TYMPANITES OF THE VAGINA AND CONSECUTIVE STERILITY IN A MARE [*By J. Bournay*].—Among the many causes of sterility in large females, a constant tympanitic condition of the vagina may have been overlooked. This case shows that it is not to be neglected. A valuable mare, thoroughbred, during a difficult labor three years before, had a laceration of the vulva, at the upper commissure. Towards that commissure the labiæ are apart and the vulva open. The solution of continuity is 35 millimeters long and runs towards the anus, a little to the right. On exploring the vagina, its *cavity is found excessively dilated, measuring in front of the anterior straight 23 centimeters in height and about 20 in width. As to its length, the entire forearm can be introduced; it must be at least 50 centimeters.* The walls of the vagina are smooth as well as the os. When the mare micturates or defecates there is free entrance and exit of air from the vagina. It is possible that the sterility is due to the abnormal dilatation of the vagina, due to the tympanitic condition of the organ, which itself is allowed by the imperfect closing of the vulva on account of the laceration of the upper commissure of that part. With most minute antiseptic preparations the operation of perineoraphy is performed. After refreshing the edges of the laceration they were closed by three sets of sutures, one to bring the cutaneous borders together, one for those of mucous membrane and a third for the whole mass of the lips. The after treatment consisted in sublimate irrigations, dusting with iodoform, collodion and wadding. The success was complete. Discharged after a few days, the vulva repaired, the tympanites disappeared, the vagina retracted, and two months later the mare was covered without trouble and became pregnant.—(*Revue Veterin.*)

DOUBLE GESTATION IN A MARE [*By M. A. Porcherel*].—Large female solipeds are normally uniparous, although cases are recorded where 2, 3, 4 and 5 fœtuses have been born at a single delivery. According to Cornevin, the average is about the following: for mares, about one double parturition out of 1000; in the female donkey, one in a hundred. The products are of the same or of different sex; they sometimes are of different species when the mare, for instance, has been successively covered by a stallion and by a male mule. This last is rather rare. The case here recorded is one more to record. The owner of a mare had her covered the same day by a stallion and a male mule; the covering being done one immediately after

the other. The mare gave birth to twins, one a mule, the other a filly, both normally built.—(*Journ. de Zoötechnie.*)

ITALIAN REVIEW.

TWO CASES OF ACUTE POISONING BY THE PERMANGANATE OF POTASSIUM [*By R. Carrozzo*].—The solution of this salt for intestinal antisepsy being frequently used at the Royal Veterinary School of Naples, and having employed it for more than two years with this object, the author records two cases of acute poisoning whose interest lies in the fact that he has found nothing on the subject in the books he had at his disposition. In the first case the permanganate was prescribed in solution, 90 grammes in one litre of water, to be administered in two doses, to relieve a case of *intestinal fermentation;* 7 grammes of tannic acid in pill was also to be given. One hour later, after the first dose was given, the animal was taken with muscular tremblings all over the body; the head was kept down, frequent passages, soft, white and very offensive; the head was covered with cold perspiration, as well as the whole body, as if the animal had had an injection of pilocarpine; the visible mucous membranes were pale, pulse frequent, small, regular; temperature below normal, 36.7° C.; dyspnœa well marked and paroxysmal. The second dose of the prescription was not given. Frictions of spirits of turpentine were applied, and drenches of hot wine were administered, and in a few days recovery was complete. The second half of the litre was given to another animal without effect. In the second case the same treatment was prescribed for an animal suffering with fœtid diarrhœa. After five hours similar symptoms were manifested, but there were besides abundant saliva, nasal and lachrymal hypersecretions, cold extremities, colic, etc. After a few days of improvement, a relapse took place and the animal died. Post-mortem could not be made.—(*Clinica Veterin.*)

CONTRIBUTION TO THE RADICAL CURE OF CAPPED HOCKS [*By R. Carrozzo*].—Following a *modus operandi* employed by Prof. Lanzillotti-Buonsanti, which consists in the extirpation of the cyst which forms the capped hock, the author resorted to it on a horse which had his left hock disfigured. Several forms of treatment had been used, down to the subcutaneous puncture, followed by blistering, but nothing had succeeded; there always remained a small tumor, which, although smaller than at first, was an eye-sore to the beauty of the animal,

and the owner was willing to have anything done to obtain a cure. The operation of Prof. Lanzillotti-Buonsanti was suggested and accepted. The animal was cast and properly secured. A bandage of Esmarck was applied, and the parts strongly disinfected. By an incision made in the centre of the tumor the cavity was exposed, and the upper part of the cyst excised, not without a great deal of difficulty, on account of the thickness of the cellular tissue and the adherence of the cystic membrane. The lower part of the cyst was still more difficult to dissect, but ultimately it was removed. There was considerable annoying hæmorrhage, but not serious. The wound was thoroughly cleaned, a solution of iodoform in ether was laid over, a drainage tube applied and silk sutures closed the incision. The tube was removed on the seventh day. On account of the movements at the hock some stitches gave way. A thick blister to immobilize the part was applied and the result was a perfect hock, with only a small imperceptible cicatrix.—(*Clinica Veterinaria.*)

Ulcerated Wound of the Internal Face of the Left Hind Fetlock—Operation—Recovery [*By Prof. Lanzillotti-Buonsanti*].—This mare interfered much, and as a result had first a single wound, then a thickening, and later a tumor quite large on the inside of the left hind fetlock with an ulceration, round, bleeding easily, and attached to the tumor, which is rather puffy and quite loose at its base. Encouraged by the results he had already obtained in two similar cases, the owner proposed to resort to the extirpation of the growth, plastic operation somewhat analogous to that used for extensive broken knee. The mare was cast, properly secured and the parts well prepared for operation. Two curved incisions were started from the upper part of the growth down to nearly the middle of the os suffraginis, where they met again, involving between themselves an elliptoid part of skin, in the centre of which was the ulcer. The edges being dissected, the thick mass was made free and removed with care, its deep surface resting upon the blood vessels, which were healthy. The incision made had left a space of lost substance measuring 12 centimeters in length and 3 in width. The wound was cleaned, a drainage tube laid in place, and the edges brought together with interrupted sutures. The treatment consisted in irrigations through the drain of sublimate solution. The result was most satisfactory. Cicatrization was suppurative only in the superior third of the solution; in the lower part it was com-

pleted by first intention. In the first case operated by the author adhesive cicatrization was thorough in the entire wound, except in one spot, where there was a cutaneous slough. In the second cicatrization by first intention was typical.—(*Clinica Veterinaria.*)

PRIMITIVE TRAUMATIC SERO-BLOODY EFFUSION OF THE WITHERS [*By Prof. Lanzillotti-Buonsanti*].—Two cases of this nature are recorded by the author in which a slight modification in the treatment was followed, but both recovered in a very short time. In the first case it was a single effusion on the left side of the withers, with causes unknown, which had resisted treatment with blisters. The diagnosis had been easily made and confirmed with explorating puncture. The treatment consisted in a single incision, some 12 centimeters long, which allowed the escape of about 200 cubic centimeters of liquid; the cavity was scraped, all foreign bloody extravasations, connective tissue shreds and mortified muscular fibres were removed, a drain tube inserted and the wound closed with interrupted sutures. Repeated irrigations through the drain with sublimated solution were followed by rapid cicatrization. In the second case, the cyst was still larger, involving both sides of the withers. The *modus operandi* was somewhat different. After removing by a puncture made with a trocar on the top of the tumor the liquid that it contained, say some 400 cubic centimeters, two incisions were made in front and back of the lower part of the cyst on the left side, and through these two drain tubes were inserted and brought out at the point where the puncture had been made and which had been enlarged by a short cut of the bistoury. Similar manipulations were made for the right side. With a spoon of Volkmann the walls of the cyst were scraped, the clots of fibronic and small moving bodies of connective tissue were removed. The after treatment consisted in repeated irrigations of sublimate solutions. Sixteen days after the drain tubes were removed, and to hasten the absorption of the swelling, a round strong blister was applied. In four weeks from the operation, recovery was complete.—(*Clinica Veterinaria.*)

CONGENITAL STENOSIS OF THE CARDIA [*By Dr. A. Gasparini*].—Two days after birth, a young colt began to exhibit regurgitations of milk and saliva, which reappeared periodically every six or eight days. A month later, the neck became deformed, and on the left side there appeared a swelling, cylindroid in form, about the size of a fist, and which extended in

the jugular groove as a thick cord which seemed to be the carotid. No other abnormality externally, but the swelling, filled with food or saliva, kept on increasing. The animal was rapidly losing flesh, and towards the end of its life the vomitings were more constant. He would chew and swallow his food normally, but a few minutes afterward he would arch his back, stretch his neck, lower his head, and by a spasmodic motion of the lower jaw the regurgitation would take place. He died from inanition. Œsophageal catheterization had been applied to see if there was a foreign body or some intra or extra œsophageal growth, but the examination was not successful. At the post-mortem the œsophagus was found of uniform size in the cervical and thoracic portions, but at the entrance into the stomach there was an oval dilatation, followed by a sudden contraction, which would scarcely allow the introduction of a quill; there was no foreign body, no tumor, the muscular coat was flabby and discolored, and the mucous membrane formed a kind of narrow cylinder showing the gastro-œsophageal opening. The stomach was small and atrophied, of a capacity of not more than one litre; the pyloric opening was normal. No treatment was attempted—none could be.—(*Riforma Veterinaria.*)

On the Treatment of Toe Crack [*By Prof. Pench*].—For ten years the author has used this mode of treatment, which he claims fulfils all the essential required condition of recovery for toe cracks, viz.: The immobilization of the borders of the crack. He considers it superior to all the other means recommended, insuring safety and certainty of success. There is no need for special mode of shoeing, no bandage, no stimulating applications, etc.,—it is a simple "carrage" of the cracks analogous to an old method, but simple in its application and economical in its results. This method consists in drilling with a gimlet a tract through the wall and implanting in it the blade of a nail, well hammered, whose head has been taken off and the extremity bent and turned over. When the nail has been driven gently through the tract both extremities are riveted over as an ordinary nail. Every four or six weeks a new nail is driven in. In some animals it may be necessary to keep up this monthly nailing for two or even three years.—(*Revue Veterin.*) [We fear few American owners of horses would undertake a treatment so uncertain in its results as to occupy three years for recovery, and as the hoof grows new about three times during that period it must fail entirely to cause a union or there is persistent resplitting of the hoof. We would suggest as much

better, quicker and more surgical, the insertion of a horseshoe nail at one or two points to immobilize the edges of the crack, the higher nail being placed about an inch and a half from the coronary band, then deep cauterization of the wall above the nails, removal of the horn for a distance of one inch on each side of the crack, and a subsequent burning across the crack at the lowest point of the thinned wall entirely through the horn to the lamina, thus entirely destroying the continuity of the fibres, and making reopening impossible. In a week remove the remnant of the crack from the coronary band to the point of deep cauterization. By this method the writer seldom fails to effect a cure, and the horse can resume work in from three to four weeks.—R. R. B.]

BIBLIOGRAPHY.

SURGICAL OPERATIONS. By Dr. W. Pfeiffer, of the University of Giessen. Second Edition. Richard Schoetz, Berlin, Luisenstrasse, 36.

I remember the time, when I was a student, the practical operative classes were peculiarly carried out, at least at the school where I was. The students were almost left to themselves, and had for guides in their manipulations only their notes. Then works on operative surgery were not as plentiful as at present. The professors who had charge of the classes had too much to do to show every one of us the proper way to work, or to correct imperfect manipulations. How different to-day. Only a few years ago (in 1895) Prof. Cadiot published his "Manual of Exercises in Surgery," inaugurating a new road for the benefit of the practical education of his students; this little work was soon translated and published in America. In 1897 Prof. Pfeiffer, of the University of Giessen, issued another, which Prof. Williams translated and published a short time ago, with the addition of the description of a few typical American operations. All of those we have already noticed in the REVIEW at their proper time.

To-day we have received the second edition of the little book of Prof. Pfeiffer. In it we find added a few operations which had not been considered in the previous issue—castration and some special neurotomies. It is, as was its predecessors, well illustrated, and to all appearances is likely to obtain great success among German practitioners, principally students.

With all the facilities that are now at hand, with the numer-

ous works on practical operative surgery, which have been issued, and with the several manuals of operative exercises which are now found in all languages, the specialty of surgery in veterinary medicine will not be long in assuming a proper place similar to that it occupies in her sister science. A. L.

ATLAS DER ANATOMIE DES PFERDES (Atlas of Equine Anatomy). By Dr. Med. Vet. Reinold Schmaltz, of the Veterinary High School of Berlin. (1st part.) R. Schoetz, Berlin.

We have received from the house of Richard Schoetz, of Berlin, the first atlas of a series of four which are to form an illustrated work on the anatomy of the horse, by Prof. Doct. R. Schmaltz, V. S., who occupies the chair of anatomy at the Imperial Veterinary High School of Berlin. There is no text, properly speaking, in this work, but the arrangements and minuteness and completeness of each figure in each plate are such that one who studies them cannot help but become readily familiar with the description of the subjects, and learn all about their general aspect. In the atlas that we have received there are 23 plates, handsomely and correctly done; each bone, especially those of the extremities, showing every peculiarity of their external conformation. Among those 23 plates, 10 of them have duplicates, made on thin transparent paper, upon which the outlines of the bones are marked in blue ink, and upon these the insertions of each muscle are outlined on dotted lines, which indicate perfectly the boundaries of each insertion. Plates 12, 13, 14 and 15 show the external appearances of the cervical, dorsal and lumbar vertebræ and of the ribs; while the 16th and 17th show the insertions of muscles. In plate 18 the sternum with the triangularis and the bloodvessels. The sacrum is illustrated in plate 19. In the 20th we have the lumbar regions; plate 21 shows the vertebral column, with the ribs, forming the thoracic cavity and the muscles pertaining to it. The last two plates show the whole view of the trunk with the upper part of the extremities and the insertion of the abdominal muscles.

We have carefully examined every plate and every bone represented; we have given minute attention to the drawing of the insertions of every muscle, and this study has been for us a great source of enjoyment. Years ago, as far back as 1860, we contributed to the plan of a similar work, the very plates of Prof. Schmaltz; we worked and made them natural size; but the work, nearly finished, was not published for want of an editor. Prof. Schmaltz has done well, we believe; this work

will no doubt fill a good place in the study of veterinary anatomy and become a benefit to every student of every nation. The universal veterinary anatomical nomenclature, which was announced at the Congress of Baden, will permit its being read by every one. There is no doubt that the completion of the work will be anxiously looked for. A. L.

OBITUARY.

JOSIAH HENRY STICKNEY, M. R. C. V. S.

The death of this well-known veterinarian occurred at the Massachusetts General Hospital, Boston, February 4th, after an illness of about one week. His funeral took place at Mount Auburn Cemetery Chapel, Cambridge, at 12 M., February 7th, and was largely attended, among those present being a large delegation of former professional associates.

In the above simple announcement the veterinary profession of this country will learn that there has departed from earth one of its great pillars of support—one of those noble characters which in its early struggles to gain a foothold among the learned and honorable professions were so few; a little coterie who stood together and demanded recognition through examples of worth and honorable dealings. One after another of the "old guard" are passing away, and soon the roll-call of those who were present at the birth of our national association will be answered by a solemn echo from beyond the grave. Only last month we were called upon to record the death of Charles Burden, one of its charter members, which is quickly followed by that of Dr. Stickney, its first President (1863–64).

Josiah Henry Stickney was born in Boston, Feb. 11, 1826. His father, Josiah Stickney, of Watertown, was a merchant and banker there; he was President of the Market Bank and of the Massachusetts Horticultural Society, and a director of the Western Railroad and also of its successor, the Boston & Albany Railroad. After attending the well-known private school of Gideon F. Thayer in Chauncy Place, Mr. Stickney, at his father's desire, entered business in 1849 as a member of the firm of Cutler & Stickney, at 1 India Street. The paint, oil and glass trade was not congenial to the young man; the outcome was that in 1854 he commenced to study medicine with Dr. Daniel D. Slade; later he attended the Tremont and Harvard medical schools; while a student he spent one year as house surgeon at the Mas-

sachusetts General Hospital, where he died 43 years later; he graduated in 1858 with the degree of M. D.

Dr. Stickney then went as surgeon on one of Train's vessels, sailing to England. On his arrival in that country he entered the Royal Veterinary College at London, from which he graduated with high honors in 1859. When he returned in 1860 a severe cattle plague of pleuro-pneumonia was raging in Massachusetts, and Gov. Banks appointed him to the State Board of Health, and he did much to eradicate the plague in four years. Dr. Stickney then went into practice as a veterinary surgeon with great success, and was employed actively in his profession up to within a short time of his death.

Dr. Stickney was married in Waltham, Oct. 8, 1861, to Elizabeth Shannon, daughter of Jonas C. March, of Boston. His widow and four children—Mary, wife of Henry Swinscoe of Philadelphia, Ellen F. Stickney, Josiah Stickney of Clinton, and I. Lombard Stickney of Jamaica Plain—survive him.

CORRESPONDENCE.

AN AMBIGUOUS CRITICISM.

ITHACA, N. Y., February 18, 1901.

Editors American Veterinary Review:

DEAR SIRS:—There appears in the REVIEW for January, 1901 (p. 745), under the caption of "Veterinary Topics of Today," by the head of the "Department of Therapeutics" of the *Journal of Comparative Medicine* some remarks in relation to the recent booklet, "A Course in Surgical Operations," the intent or motive of which is not clear.

Dr. Martin says: "While many of the operations recommended in this work are a decided innovation in American veterinary surgery, the value of several from a practical point of view may be questioned." The book recommends none of the operations described at all; it does not advise median neurectomy for ringbone or heaves; it merely describes one (not the only) method of operating in advisable cases. Nor can we see the use of the criticism "from a practical point of view" when he does not point out which of the operations are dangerous innovations, nor why they are dangerous.

Proceeding, he says: "There is a vast amount of difference in point of utility and also from a financial standpoint in performing an experimental operation upon a worthless animal in

the surgical clinic of a veterinary school and that performed on a valuable animal in private practice." Certainly. But what veterinary school performs "an experimental operation upon a worthless animal in the surgical clinics"? We know of none, and if Dr. M. graduated from such an institution we pity them both. But if so, does it warrant Dr. M. in classing all institutions with that one?

The operations which Dr. M. so indiscriminately assails are not experiments, but have been proven in the best veterinary practices in Europe and America. If M. refers to the American operations, most of them were studied out in his own State, some of them in a country practice within 50 miles of him, and were proven before Dr. M. entered the profession, and were used on animals of as high average value as are kept in Dr. M.'s territory. All of the operations have been and are now regularly used on good animals and the results have been made public on their merits.

Continuing on p. 748 of the same article Dr. M. very nearly commits an "innovation" himself by reference to the "rod-like bacilli" of malaria. Until Dr. M. publishes full details of his recent discovery as to the etiology of malaria we would suggest that readers of the REVIEW shall not abruptly desert the views of all the other modern investigators to the effect that the parasite belongs to the protozoa and accept the views of Dr. M. that it is caused by a bacillus. Very respectfully,

W. L. WILLIAMS.

ILLINOIS VETERINARY EXAMINING BOARD—A REPLY TO DR. SWAIN.

CHICAGO, Feb. 12th, 1901.

Editors American Veterinary Review:

DEAR SIRS:—I little thought that when I took a random shot at the committee of the Illinois Veterinary Medical and Surgical Society, that I was going to hit the king bee of the hornet's nest. But such seems to have been my luck. He says so, and his groanings indicate that he has been hit hard. I will not take up your valuable space by attempting to answer the Doctor's charges in detail; in fact, such a course is rendered unnecessary by the Doctor himself, as I could string no words together that would emphasize more strongly the position I took in my last epistle than the learned Doctor has himself done for me in his letter. The "dementia" the doctor speaks of has been much in evidence. In fact, it is an all-pervading

characteristic of this class of practitioners. Long practice in pretense and deception has so blunted the finer instincts that it is easy for their depraved imaginations to surround themselves with a halo of greatness, in which they live and move. They are more to be pitied than condemned. We have met with many forms of this "dementia," but for monumental egotism the author of the letter in the last number of the REVIEW stands unique. He imagines himself to be the peer of such men as Abraham Lincoln, Daniel Webster, Burns, Burritt, Shakespeare, Moses and Solomon! Wise men have been searching the country over for a fit subject for the Hall of Fame, and, lo, we have found him! One to whom future generations of veterinarians may do reverence, for has he not said so? I am loath to disturb the Doctor's dreams, but to be truly great one must have the jewel of consistency, which the Doctor seems to have lost. As a sample of the "vigorous protests" spoken of, I will append one from the Doctor himself on his own letter head. It will give the readers of the REVIEW some idea of the troubles examining boards have to contend with in dealing with these men, who boast of "soldiers' duties," "picket lines," *et cetera*, *ad nauseam*, but when a simple duty is presented to them they make an ignominious retreat.

For many non-graduate practitioners I have the profoundest respect, and for Dr. Swain nothing but pity in that his undoubted talent has been allowed to run wild.

JAMES ROBERTSON.
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Office: 127 South Franklin Street.
Telephones: Office, 343; Residence, 249.

The Castration of Ridgling Horses and Spaying of Cattle a Specialty.

DECATUR, ILLINOIS, Sept. 20, 1899,

Hon. C. P. Johnson, Sec. B. V. E., Springfield, Ill.:

Yours of the 18th inst. is before me, contents noted, and replying would say that while the men mentioned in my letter of some time past as not qualified to practice are wholly unfit as to qualification as veterinarians, yet, after considering the matter, I do not feel that I am justified in going into any kind of controversy or trial of their qualifications and thereby incur their ill-will, so if the Board does not deem it proper to call them before that body and decide the matter for themselves, I hardly think it prudent for me to interfere further; these men and I are perfectly friendly, and I had no object in writing as I did except the good of the profession.

I will be pleased to receive my certificate at your earliest convenience. Very respectfully, S. H. SWAIN.

SOCIETY MEETINGS.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.

The eighth annual meeting was called to order by President S. H. Ward, Jan. 10, at 1.30 P. M., at the Metropolitan Hotel, St. Paul.

The following members responded to roll-call: Drs. C. C. Lyford, M. H. Reynolds, S. D. Brimhall, R. Price, L. Hay, K. J. McKenzie, S. H. Ward, J. G. Aunaud, J. A. Hainsch, J. N. Gould, J. W. Gould, J. J. McLaughlin, B. A. Pomeroy, H. C. Lyons, J. S. Butler, H. C. Peters, M. J. Sexton, F. H. Farmer, J. P. Foster, R. LaPointe, and D. M. McDonald.

The minutes of the last meeting were read and approved.

President Ward then gave his address, going over the work done by the association pretty thoroughly and dealing with the work it should take up in the future. Among other things, the Doctor spoke of a bill to be introduced at the present session of of the Legislature to reimburse owners of condemned glandered horses and asked the support of the members in its behalf. The Doctor thought that such horses should be appraised at about two-thirds their value, and in order for the owner to secure the indemnity he must give satisfactory proof that the condemned animal has been owned in this State for at least three months prior to being condemned. Dr. Ward also spoke of our State Examining Board, and thought it should be composed of qualified veterinarians who were members of this association. He then thanked the Secretary and members for their hearty support during his term of office.

The Treasurer's report was then read and accepted.

The following gentlemen were then duly elected to membership: Drs. J. M. Lamber, St. Peter; Oscar Rydell, Wheaton; F. A. Ilstrup, Wilmer and H. A. Hela, Cokato.

Dr. S. D. Brimhall next reported for the Committee on Infectious Diseases. Eight different outbreaks of hæmorrhagic septicæmia had been reported since the last meeting; anthrax only one outbreak, in which two cases were reported; cerebro-spinal meningitis had been reported in two instances; several cases of rabies had been reported; two outbreaks of foot-rot in cattle had been investigated and two others reported.

Dr. Reynolds gave his report on recent advances in veterin-

ary surgery, which proved quite lengthy and dealt extensively with matters pertaining to recent advances.

Dr Lyford reported for Committee on Legislation, and quite a lively discussion followed. Dr. Price thought we should call the attention of the horseshoers' union to the fact that there is a law in this State governing the practice of veterinary medicine and surgery.

On motion, the several reports were accepted and committees discharged.

Dr. Price then read his paper on "Rabies," which proved very interesting, as a great deal of it was taken from actual experience with cases in the Doctor's practice, and numerous photographs of different cases were passed among the members. Dr. Lyford led the discussion of Dr. Price's paper and gave his experience in autopsies while in London with Dr. Fleming.

The following officers were elected for the ensuing year:

President—Dr. J. N. Gould, Worthington.

First Vice-President—Dr. R. Price, St. Paul.

Second Vice-President—Dr. J. J. McLaughlin, Blue Earth City.

Secretary and Treasurer—Dr K. J. McKenzie, Northfield.

Trustees—Drs. L. Hay, J. W. Gould and H. C. Peters.

On motion, it was decided that Northfield should be the place for holding the next meeting. The meeting then adjourned for supper.

At 7.30 P. M. J. P. Foster read his paper on "The Management of Brood Mares." A lengthy discussion followed, touching on the best purgatives to be given a mare in foal and the treatment of mares about to abort.

Dr. H. C. Peters next read his paper entitled "A Non-Classified Disease in Horses." Dr. Aunaud reported similar cases occurring in Beltrami County, and Dr. Ward reported cases of a similar nature met with while practicing in Manitoba.

Dr. Gould, the newly elected President, then appointed the following committees:

Colleges—Dr. D. M. McDonald.

Infectious Diseases—Dr. S. D. Brimhall.

Finances—Dr. J. J. McLaughlin.

Legislation—Drs. M. H. Reynolds, H. C. Lyons and M. J. Sexton.

Recent Veterinary Literature—Surgery, Dr. J. G. Aunaud; Bacteriology, Dr. R. Price; Medicine, Dr. L. Hay.

The meeting adjourned until January 11th, at nine A. M.

The association met at the Bacteriological Laboratory of the State University, where several autopsies were held for the demonstration of hæmorrhagic septicæmia in previously inoculated calves. Dr. Wilson of the University, who has been making a special study of the disease, gave the association a talk on the bacteriology of the disease. After dinner the members met at Dr. Price's infirmary for clinics. After the clinical material was disposed of the meeting was again called to order and Dr. Brimhall read his paper on "Hæmorrhagic Septicæmia." The paper embraced statistics of the disease, together with full symptoms and post-mortem investigations. The paper was well received by the association.

The following members were appointed to prepare papers for the next meeting: Drs. Ward, Hay, Amos, McDonald, La-Pointe and Price. The meeting then adjourned.

K. J. McKENZIE, *Sec'y. and Treas.*

ILLINOIS VETERINARY MEDICAL AND SURGICAL ASSOCIATION.

The twelfth annual meeting came to order, with President V. G. Hunt in the chair, on Jan. 9th, at Decatur. The roll-call was responded to by a goodly number. The minutes of the previous meeting were read and approved.

On motion, the chair appointed a committee of three to draft resolutions endorsing the candidacy of Dr. W. J. Martin, of Kankakee, for the office of State Veterinarian. A copy of the resolutions was signed by the President and Secretary and was forwarded to Governor Yates, at Springfield.

Dr. V. G. Hunt being first on the programme for a paper on "Metritis," he gave a very interesting and instructive account of this disease and the various modes of treatment, and was responded to by Dr. S. H. Swain and Dr. S. D. Brown.

Dr. W. A. Swain next read a paper on "Muscular Rheumatism," responded to by Drs. L. C. Pray, V. G. Hunt, and C. A. Hurlbutt.

Dr. A. Travis then delivered a short talk on the treatment of "Stomatitis," responded to by Dr. H. W. Leavitt.

An hour was then devoted to the discussion of the foregoing subjects, after which adjournment was taken for dinner.

Reports of cases being taken in order, many interesting subjects were introduced and discussed at length.

At 10.30 the entire association partook of an oyster supper

at the expense of Neisler and Burwell, wholesale druggists, and adjournment was taken until 8 A. M., January 10th.

January 10.—Meeting called to order by President Hunt.

Dr. R. W. Brathwait being absent, Dr. C. A. Hurlbutt gave the association an intèresting talk on "Antiseptic Surgery," responded to by Dr. S. D. Brown.

Dr. S. H. Swain being next on programme, read a very concise essay on "Equine Canker," responded to by Drs. V. G. Hunt and W. J. Martin.

On motion, the length of time allowed to each person having the floor was limited to three minutes.

On motion, the location and date of the next meeting were fixed in Decatur, Ills., on August 8th and 9th, 1901.

The association next proceeded to the election of officers for the ensuing year. Dr. V. G. Hunt, of Arcola, was reëlected by acclamation to fill the office of President; first Vice-President, Dr. John Osborne, of Nokomis, Ills.; second Vice-President, Dr. D. K. Goodale, of Mt. Vernon, Ills.; Secretary, Dr. W. A. Swain, of Mt. Pulaski, Ills.; Treasurer, Dr. S. H. Swain, of Decatur, Ills.

Standing committess appointed were: Committee on Programme—Drs. V. G. Hunt, S. H. Swain and W. A. Swain. Committee on Membership—Drs. S. H. Swain, John Osborne, J. R. Groves, J. M. Reed, and W. C. Dawson. Committee on Legislatiòn—Drs. V. G. Hunt, S. H. Swain, and John Osborne.

The meeting then adjourned until August 8th and 9th, 1901.

W. A. SWAIN, *Secretary.*

AMERICAN VETERINARY MEDICAL ASSOCIATION.

The first meeting of the Committee of Arrangements for the Atlantic City meeting was held in Jersey City, N. J., Feb. 18th. The chairman, Dr. Wm. Herbert Lowe, of Paterson, N. J., presided, and Dr. T. E. Smith, of Jersey City, was elected Treasurer of the committee. Preliminary plans were made and the work of the committee outlined. A large fund is to be raised, and everything will be conducted on a magnificent scale at Atlantic City next September. It is proposed that an entire half day be devoted exclusively to the surgical clinic; that operations be performed with due regard to modern scientific methods and principles, not overlooking aseptic and antiseptic precautions. Only surgeons of known ability and skill will be asked to operate. No surgeon will be given a place on the clinical programme unless he gives the committee assurances that he will be present

and operate. The committee believe that the surgical clinic is a popular and profitable feature of the meetings of the association, and therefore propose to use every effort possible to overcome the difficulties and failures of those of former meetings and make it in every way worthy of the first meeting of the new century.

The profession in New Jersey feel very grateful for the co-operation of Pennsylvania, New York, and other neighboring States. With such efficient and earnest co-operation on the part of the local veterinary forces there seems to be no doubt but that the Atlantic City meeting will eclipse any meeting ever held on the American continent. It is said that the interest throughout the West in regard to the 1901 meeting is greater than has ever before been known in the history of the association.

ALUMNI ASSOCIATION OF THE VETERINARY DEPARTMENT OF NEW YORK UNIVERSITY.

Notices were sent to the graduates of the N. Y.-A. V. C. for the purpose of organizing an Alumni Association of the Veterinary Department of New York University.

The meeting was held at the College Building, Feb. 21st, 1901. Dr. Eichhorn was installed as temporary Chairman, Dr. Fink as temporary Secretary.

The first order of business was the nomination of officers for the new association, which were as follows:

President, Dr. Fink.
First Vice-President, Dr. J. J. Hayes.
Second Vice-President, Dr. W. A. Young.
Secretary, Dr. Eichhorn.
Treasurer, Dr. Meiners.

Moved that the nominations be closed and the Secretary cast a ballot for each officer.

Moved and seconded that this association be called the Alumni Association of the Veterinary Department of New York University.

By adoption, all graduates of the New York College of Veterinary Surgeons and American Veterinary College prior to the amalgamation of the two colleges, be eligible to membership in this association.

It was decided to adjourn and call a meeting on April 1, for the purpose of admitting new members, and arrangements to hold a joint banquet on the same evening of the Alumni

Association of the A. V. C., N. Y. C. V. S., and the Veterinary Department of New York University.

A vote of thanks was extended by the new organization to Dr. Hanson, for assisting us in founding the new Alumni Association.

The meeting adjourned. A. EICHHORN, *Secretary*,
141 W. 54th Street, New York City.

NEWS AND ITEMS.

A BILL has been introduced in the California legislature making the "doping" of race horses a felony with a maximum punishment of five years in the penitentiary.

A COMPETENT authority estimates that during the past two years the British government has purchased in the United States for service in South Africa horses and mules to the value of $100,000.

AMONG those who took the Civil Service Examination for assistant meat inspectors of the Bureau of Animal Industry at New York on February 5 were Drs. Adolph Eichhorn, W. L. Johnson, John J. Hayes, Deronde and Gill (not Harry D.).

A. MITCHELL, D. V. S., 5th Cavalry, U. S. Army, has resigned his commission on account of the failure of Congress to give rank to the Army Veterinarian, and is now in the transport service of the British Government.

W. L. JOHNSON, D. V. S., of Brooklyn, N. Y., having been ordered by his physician to take a sea voyage, has united business with his quest for health by engaging with the British government to accompany a transport of American horses from New Orleans to South Africa.

PROFESSOR JOSEPH MCFARLAND, the well-known bacteriologist and pathologist of Philadelphia, has associated himself with the manufacturing drug house of Parke, Davis & Co., of Detroit, where he will devote himself to purely scientific research in his favorite field.

AT the annual meeting of the League of American Wheelmen (the national association of bicycle clubs) held last month, there were but 46 delegates present, against hundreds in former years. The Secretary's report showed that during the past year the receipts from all sources were $27,000, against $75,000 the previous year.

"IT is estimated that in the first five years of the twentieth century the enormous sum of $100,000,000 will be expended for automobiles."—(*Item going rounds of the press.*) It is also estimated that at the close of this period of automobillions that the public will be so surfeited that their abandonment will follow in the next half decade for all practical purposes.

THE average life of usefulness of an American horse in the British Army in South Africa is said to be six weeks. Ten thousand of such animals are being transported to that country every month, and the fear is expressed by the English representatives that the American supply will not hold out much longer.

DR. J. C. CALLANDER, a well-known veterinary surgeon of Parkersburg, W. Va., while administering a physic ball to a horse on January 18 received a slight abrasion of the skin on his hand. The following day the horse died, having developed all the symptons of a pure case of rabies. The Doctor immediately left for Chicago, and received treatment at the Pasteur Institute in that city. Several horses and cows have since died of rabies in Parkersburg.

THE POST-GRADUATE COURSE AT THE NEW YORK STATE VETERINARY COLLEGE.—The following veterinarians are or have been in attendance upon the short course for veterinarians at Ithaca during the winter: E. B. Doyle, V. S., Moravia, N. Y.; A. S. Morrison, V. S., Chesterville, Ontario, Can.; Herbert Killps, V. S., Batavia, N. Y.; Mark D. Williams, D. V. S., Middleport, N. Y.; Daniel M. Kellogg, V. S., Farnum, N. Y.; T. S. Childs, V. S., Saratoga Springs, N. Y.; W. H. Salisbury, V. S., Clifton Springs, N. Y.; E. F. Vorhis, V. S., Owego, N. Y.; W. G. Dodds, V. S., Canandaigua, N. Y.; O. B. French, V. S., Honeoye Falls, N. Y.

HORSES AT THE PAN-AMERICAN.—Superintendent F. A. Converse announces that he is planning to accommodate 1000 horses at the coming Pan-American Exposition. The horse show will not be held until October. The breeds that will be recognized are the Thoroughbred, standard-bred, French Coach, Cleveland Bay, Oldenberg, and other German Coachers, Hackney, Morgan, Arab, Belgian, Percheron, Clydesdale, Shire, French Draft, Suffolk. Shetland ponies and classes will be provided for jacks, jennets and mules. A feature of the equine exhibit will be the classes for cavalry and artillery purposes.

ACETIC ACID FLUID EXTRACTS.—Dr. T. S. Childs, of Saratoga Springs, N. Y., writes as follows: "I have used the fluid

extracts made with acetic acid for over three years, and they have given me very satisfactory results, and are anywhere from 40 to 60 per cent. cheaper than the alcoholic extracts. I would very strongly advise those who have not used them to give them a trial. I make this statement because I have lately returned from a visit among a great number of veterinarians in different States, and I failed to find a man using them. I cannot speak too strongly of the satisfaction I have had with them, not only from economy but for their purity and uniform strength. I have given them a good test, and highly recommend them."

TWO CASES OF TWIST.—Robert W. Clarke, M. R. C. V. S., in the *Veterinary Record*, records two cases of torsion of the large colon, which, after giving rise to manifestations of colic, ended fatally. In the first the post-mortem revealed the following lesions: "A twist of the double colon, about two feet of the anterior portion being twisted over from left to right sufficiently to have caused stoppage of the passage of ingesta, there being little or no discoloration of the bowel. That part of the colon anterior (so far as the passage of the contents is concerned, although posterior in position) to the twist was tightly packed with a mass of dry ingesta, as also was the cæcum, but the bowels posterior to the twist were comparatively empty. The colon immediately anterior to the twist was ruptured by the pressure of the contents. That was evidently the cause of death." In the second case the post-mortem showed a twist in the same position, but the bowel was twisted from right to left.

METHODS OF CASTRATION.—A correspondent of the *Breeder's Gazette* says: "The most successful method of castrating bulls is to take them when young—before they get to their feet, and while helpless if you find them at that age. But young and old treat them all alike. After a calf has reached from four to six months, tie him firmly by the head. Have an assistant to hold him firmly by the tail. Stand behind the calf, and, seizing the end of the scrotum, with a sharp knife cut one-third of the length of the scrotum off. The testicles will then hang in 'striffen' so you may take one at a time between thumb and finger and pull down until you can catch it with both hands and pull gently until you have drawn cord and 'striffen' all out, leaving nothing to clog nor stop the opening. Use a preparation made of one-half pint of lard, one-fourth pint of turpentine, and two tablespoonfuls of salt. Mix well; take on the fingers a spoonful of the mixture and insert in the cavity, rub-

bing well around the wound, and you will never have to catch a calf to treat it, nor will you ever lose one from castration."

RED BALL BRAND STOCK FOOD.—This food is now a thoroughly established article among veterinarians, and the manufacturers report regularly increasing demand from all parts of the country, while those who first began its use are employing it upon an increasing scale. As an intestinal stimulant and digester of herbiverous food it is of great assistance in horses suffering from indigestion, especially due to defective assimilation—those animals which, while partaking of a sufficient quantity of grain, yet remain thin—and those which are bloated and hidebound from fermentation. As a menstruum to disguise worm medicines, tonic powders, or other special prescriptions for systemic effects it is of great service, as horses are fond of it, and they will readily eat it, not only when mixed with their food, but when given alone. It is not a secret mixture, but Messrs. Atkins & Durbrow, the manufacturers, 160 Pearl Street, New York, will send the formula to any veterinarian interested. The chief ingredients are St. John's bread, paltus, celery, the chloride of sodium, etc. We cheerfully recommend it, after years of constant employment.

A DWINDLING INSTITUTION.—On another page we print a very painful statement taken from the AMERICAN VETERINARY REVIEW. According to what is there stated we may in a short time see the complete failure of the efforts of a generous and high-minded corporation to maintain a veterinary school. We feel quite sure that everything has been done at Harvard to give veterinary teaching a fair chance, but of course we cannot expect that university to go on losing money forever. All the same, it is very pitiable and very disheartening to see the gradual decline and the approaching extinction of our branch of medical science there. It will be noticed that the Dean hopes for a public endowment, which will save the department before it reaches its last gasp, but that is problematical. What a chance for a millionaire, what an opportunity of achieving immortality and the grateful applause of his fellows whilst on earth! But it is more; it is an appeal to the American Government to show itself worthy of its great traditions. We trust some wise man will take up the cause of veterinary medicine, and pass a measure which will secure the future of an excellent institution. With its enormous extent of territory, its vast breadth of corn-land, requiring the help of horses for its cultivation, its huge cities, and its immense net-work of railways,

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America ought to make the care of its domestic animals and the study of their health conditions one of its most important public departments. No excuse ought to be necessary on the part of American statesmen for introducing a bill to this effect. Let our own Government take warning. It has callously left veterinary schools in this country to sink or swim as they chose, and now, with a great war on its hands not yet completed, and a dreary prospect of a difficult settlement in South Africa, it finds itself relying on the help of private individuals, whom it has studiously ignored. We will do our duty to our king and country whilst strength remains, but that strength is not inexhaustible, it may give way at any moment. Veterinary studies are fairly well organized in this country, but there is an economic weakness which may develop into a calamity. Never was there such an opportunity for a comprehensive measure by a strong government. No enormous sum is required to put veterinary teaching in England and Scotland on a sound and enduring basis, and so to remove a grievance and deal out equal justice to the three kingdoms. But once let existtng institutions and their organizations disappear, and it will be very difficult to reconstruct them. We say, long live King Edward! and may he inaugurate a glorious reign by showing his appreciation of the labors of veterinary surgeons!—(*Veterinary Journal, London, January, 1901.*)

ALEX. EGER, 34 East Van Buren St., Chicago, Ill.,

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